

COMPUTERFACTS™

Technical Service Data

TANDY® MODEL DMP133 (26-2815) PRINTER



FEATURES COMPLETE SCHEMATICS • PRELIMINARY SERVICE CHECKS • TROUBLESHOOTING TIPS •
EASY-READ WAVEFORMS • REPLACEMENT PARTS LISTS • SEMICONDUCTOR CROSS-REFERENCE

PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of Computer system malfunctions.

Check all Interconnecting cables for good connection and correct hook-up before making service checks.

Always turn printer Off before connecting or disconnecting connectors, boards or Computer.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

Digital Volt/Ohm Meter

TOOLS

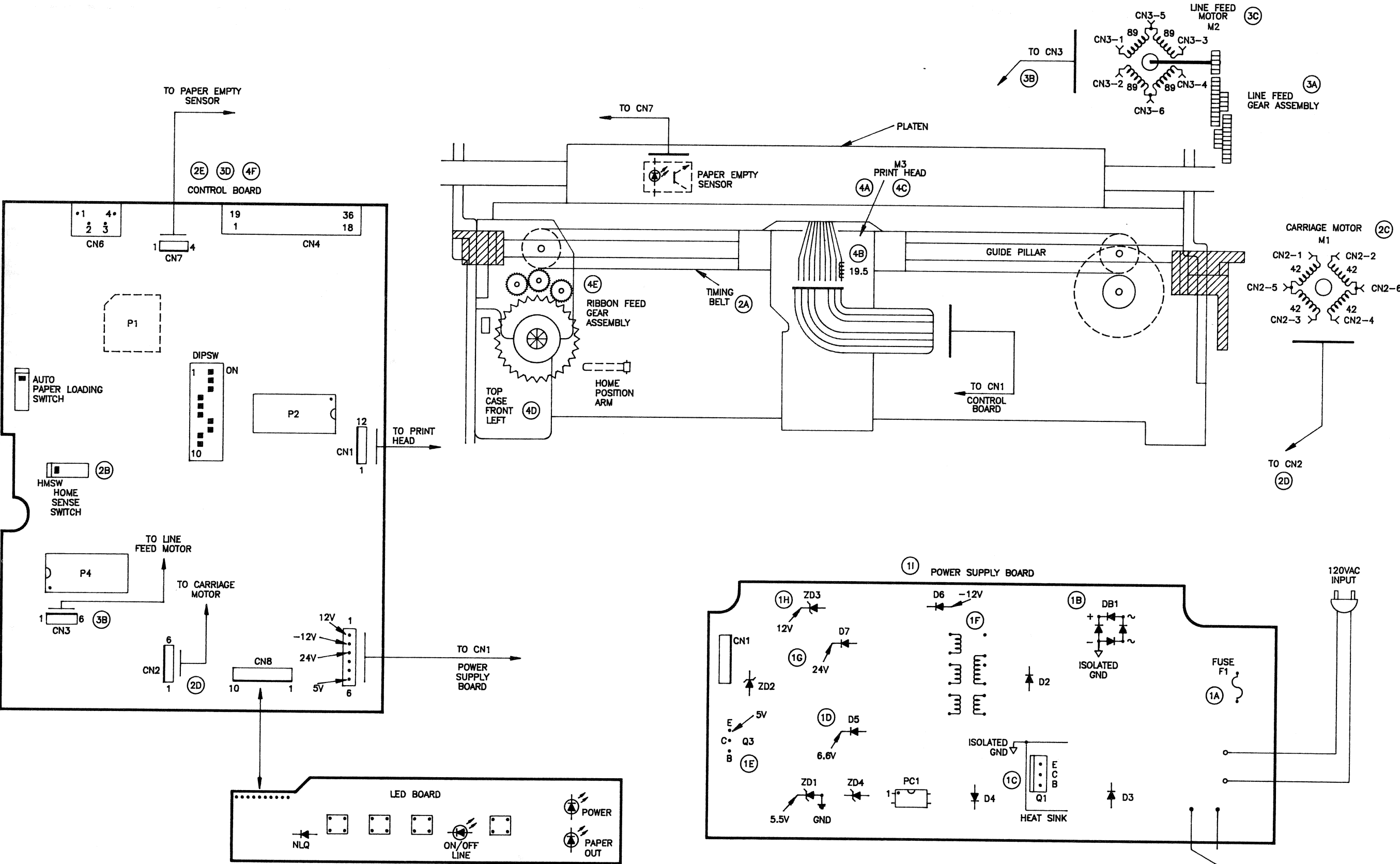
Head Cleaning Equipment (Ethyl Alcohol)
Contact and Switch Cleaner (non-spray type)
Phillips Screwdriver
Flat-Blade Screwdriver
IC Insertion and Removal Tools 28 pin
Low Wattage Soldering Iron
Desoldering Equipment

TANDY
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PRELIMINARY SERVICE CHECKS (Continued)

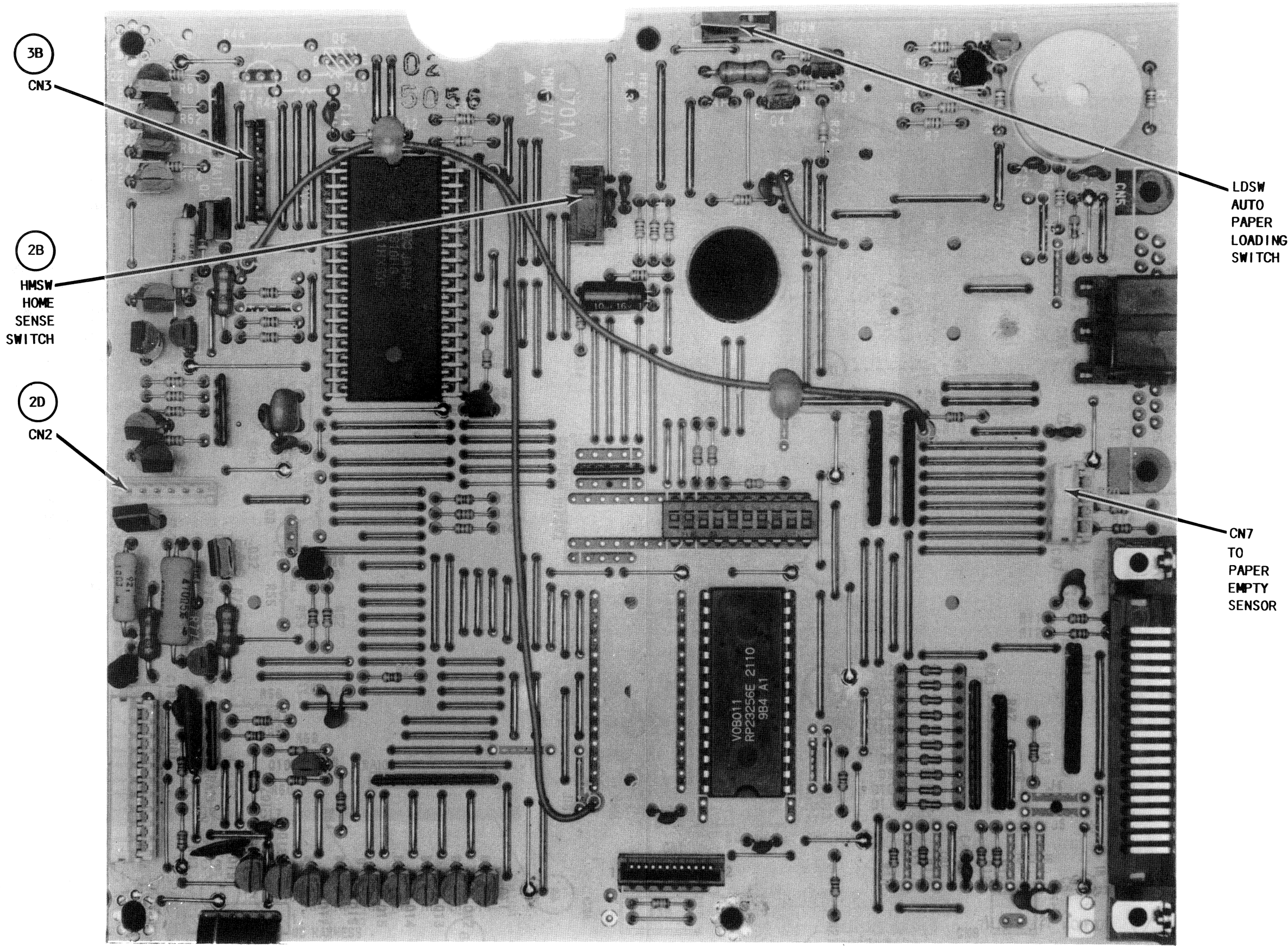


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INTERCONNECTING DIAGRAM

INTERCONNECTING DIAGRAM

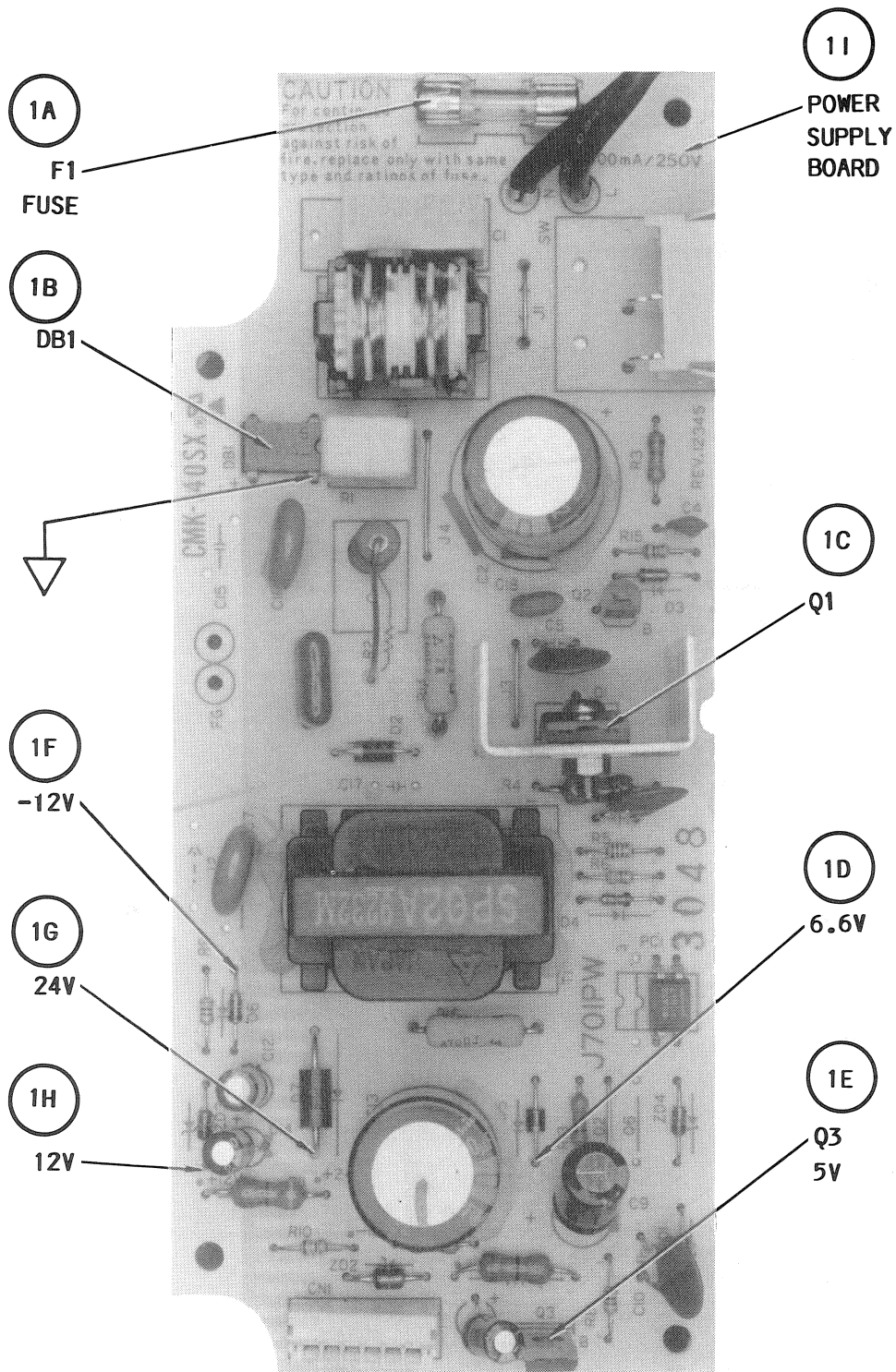
PRELIMINARY SERVICE CHECKS (Continued)



CONTROL BOARD-TOP VIEW

CONTROL BOARD-TOP VIEW

PRELIMINARY SERVICE CHECKS (Continued)



△ COMMON TIE POINT

PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

① PRINTER DEAD

- (A) Check AC Fuse (F1). If Fuse F1 is blown, replace.
- (B) Check Bridge Rectifier (DB1) for short.
- (C) Check the Switch Transistor (Q1) for short between collector and emitter.
- (D) Check for 6.6V at cathode of Diode D5.
- (E) Check for 5V at emitter of Regulator Transistor (Q3).
- (F) Check for -12V at the anode of Diode D6.
- (G) Check for 24V at the cathode of Diode D7.
- (H) Check for 12V at the cathode of Zener Diode ZD3.
- (I) Check the Power Supply Board by substitution.

② PRINTER CARRIAGE ASSEMBLY FAILS TO MOVE

- (A) Inspect timing belt for breakage. If belt is broken or worn out, perform "Timing Belt Removal" (see Disassembly Instructions).
- (B) Check the Home Sense Switch (HMSW) for short.
- (C) Check the resistance of the windings of the Carriage Motor (M1). Check for 42 ohms between pin 5, or pin 6, and each of pins 1 thru 4 of Connector CN2.

- (D) Check Connector CN2 for good connection.

- (E) Check the Control Board by substitution.

③ LINE FEED MOTOR MALFUNCTION

- (A) Check Line Feed gear assembly.
- (B) Check Connector CN3 for good connection.
- (C) Check the resistance of the windings of the Line Feed Motor (M2). Check for 89 ohms between pins 5, or pin 6, and each of pins 1 thru 4 of Connector CN3.
- (D) Check Control Board by substitution.

④ PRINTING TOO LIGHT, SMEARED OR MISSING DOTS

- (A) Check and readjust the head position or perform the "Print Head Platen Gap Adjustment" (See Miscellaneous Adjustments).
- (B) Missing dots, check for 19.5 ohms resistance for each solenoid of Print Head (M3), check Print Head by substitution.
- (C) Check Print Head for broken pins. If any pin is broken, check the Print Head by substitution.
- (D) Check for proper ribbon feed. Check for deformed or damaged top case front left. Replace and check again.
- (E) Check the ribbon feed gear assembly for malfunctioning.
- (F) Check the Control Board by substitution.

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PRELIMINARY SERVICE CHECKS (Continued)

GENERAL OPERATING INSTRUCTIONS

POWER LIGHT

The Power light comes On when the printer is properly connected to 120VAC power and the Power On/Off switch is set On.

PAPER OUT LIGHT

The Paper Out light will come on when the printer is out of paper. The Paper Out light blinks when there is a hardware fault.

ON/OFF LINE LIGHT

The On/Off Line light will be On when the printer is On line and ready. On/Off Line light will blink in the Pitch-set Mode.

NLQ LIGHT

The NLQ light will be turned On when the printer is in NLQ Mode.

ON/OFF LINE SWITCH

At Power Up the printer is On Line and ready to print. When the On/Off Line switch is pressed once the printer will go Off Line. Press and hold this switch for a moment while in On Line Mode to enter the Pitch-set Mode.

NLQ SWITCH

The NLQ switch selects either NLQ or standard print mode. In the Pitch-set Mode, pressing this switch sets the pitch.

FORM FEED SWITCH

The Form Feed switch will advance the paper to the next top-of-form position. This switch works only when the printer is Off Line. In the Pitch-set Mode, pressing this switch moves the Print Head to the left.

LINE FEED SWITCH

The Line Feed switch will advance the paper one line. For continuous paper feed press and hold this switch. In the Pitch-set Mode, pressing this switch moves the Print Head to the right.

CHARACTER PITCH SET SWITCHES

Character Pitch can be set by either of two methods:

1. Front Panel Method. In this case any control code from the host computer will have no effect on the printing. To select the character pitch using the front panel, set the printer in On Line Mode. Press and hold the On/Off Line switch until the On Line Indicator blinks. Press the Line Feed or Form Feed switch to move the print head to the position indicated on the print cover, Pica 10, Elite 12, Condensed 17, Microfont 17 or Proportional, to select a character pitch. Press the NLQ switch to set the selected character pitch.

2. By using control codes from the host computer.

DIP SWITCH FUNCTIONS

NOTE: Power must be removed from the printer before changing Dip Switch settings.

DIPSW 1

DIPSW1-1 CONTROL CODES

DIPSW1-1 is set Off for the printer to select TANDY Mode.

DIPSW1-2 is set On for the printer to select IBM Mode.

DIPSW1-2 CARRIAGE RETURN

DIPSW1-2 If set On, carriage return only on carriage return.

DIPSW1-2 If set Off, carriage return and line feed on carriage return.

DIPSW1-3 LINE FEED

DIPSW1-3 If set Off, line feed will be with every carriage return.

DIPSW1-3 If set On, line feed will be performed without carriage return.

DIPSW1-4 FORM LENGTH

DIPSW1-4 is set On for form length of 12 inches.

DIPSW1-4 is set Off for form length of 11 inches.

DIPSW1-5 PERFORATION

DIPSW1-5 1 inch skip perforation.

DIPSW1-5 is set On for valid perforation.

DIPSW1-5 is set Off for not valid perforation.

DIPSW1-6 LINE SPACING

DIPSW1-6 If set On, line spacing will be 1/8 inch.

DIPSW1-6 If set Off, line spacing will be 1/6 inch.

DIPSW1-7 CHARACTER SET

If DIPSW1-1 is Off, DIPSW1-7 will select between IBM and TANDY characters. If DIPSW1-7 is On, IBM character set is selected. If DIPSW1-7 is Off, TANDY character set is selected.

If DIPSW1-1 is On, DIPSW1-7 will select between IBM character set 1 and 2. If DIPSW1-7 is On, IBM character set 1 is selected. If DIPSW1-7 is Off, IBM character set 2 is selected.

PRELIMINARY SERVICE CHECKS (Continued)

GENERAL OPERATING INSTRUCTIONS (Continued)

DIPSW1-8 IN TANDY MODE WP/DP MODE

If DIPSW1-8 is On, Word Processing Mode is selected.

If DIPSW1-8 is Off, Data Processing Mode is selected.

DIPSW1-8 in IBM Mode, Buffer Full.

If DIPSW1-8 is Off, the printer will do carriage return only.

If DIPSW1-8 is On, the printer will do carriage return and line feed.

DIPSW1-9 AND DIPSW1-10

DIPSW1-9 and DIPSW1-10 select the interface and baud rate for serial interface.

	Serial 600bd	Serial 1200bd	Serial 2400bd
PARALLEL			
DIPSW1-9 Off	Off	On	On
DIPSW1-10 Off	On	Off	On

INSTALLING THE PAPER RACK

To install the paper rack on the printer, open the printer cover. Hold the paper rack upright, insert the tips of the rack on the supporters on both sides of the printer on top cover. For single sheet printing pull up the folding leg and insert it into the hole centered on top of the case. For printing on continuous fanfold paper place the rack in its horizontal position.

INSTALLING TRACTOR FEED UNIT

To install the tractor feed, set the printer power switch Off, remove the paper rack and open the printer cover. Place the front pins into the holes then push down on the rear of the tractor unit until the tractor is secured in position. Turn the platen knob clockwise to move the paper ball toward the platen.

HOME SENSE

When the carriage assembly pushes against the microswitch of the Home Sense, the microswitch is turned On causing pin 35 of the CPU IC (P4) to go logic Low.

PAPER EMPTY DETECTOR

The Paper Empty Detector is a photo sensor activated by the reflections of light produced by the LED in that sensor. When paper reflects the light the sensor transistor is turned On and pin 34 of the CPU IC (P4) will check logic High. If the printer runs out of paper the sensor transistor will be turned Off and pin 34 of the CPU IC (P4) will check logic Low.

AUTOMATIC PAPER LOADING SWITCH

The Automatic Paper Loading Switch is a microswitch which can be activated by turning the Paper Loading Knob counterclockwise. When the microswitch is On, pin 36 of the CPU IC (P4) checks logic Low.

MISCELLANEOUS ADJUSTMENTS

SELF-TEST

To run self-test, press and hold the LINE FEED Switch while setting the POWER Switch On. The printer will print the self-test in standard font. If the NLQ Switch is pressed instead of the LINE FEED Switch, the test will be printed in the Quality font.

PRINT HEAD PLATEN GAP ADJUSTMENT

The Print Head Position Lever is located on the right side of the platen, it is used to adjust the Print Head (M3) according to paper thickness variations. When the gap is too narrow, it can cause smudging in the printout, paper damage at the left or the right margin,

or inaccurate line feeding. If the gap is too wide, it can cause light printing or missing characters. When the Print Head Position Lever is pushed all the way towards the platen it is set to position 1. When the lever is pulled away from the platen it is set to position 7. Perform the self-test in the Standard Character Mode, when the Print Head Position Lever is at positions 2, 3, and 4. If smudging appears, or dot missing at positions 2, 3, and 4 on the right side or on the left side, rotate the Print Head Adjustment Lever R or the Print Head Adjustment Lever L until there is no smudge and no dot missing. Run the self-test and check the print quality. The adjustment is complete when print quality is satisfactory.

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PRELIMINARY SERVICE CHECKS (Continued)

DISASSEMBLY INSTRUCTIONS

UPPER CASE UNIT REMOVAL

Remove the printer cover, the paper rack assembly and the paper feed knob. Move the Print Head (M3) to the position of the front cutout of the upper case unit. Remove six screws holding the upper case to the lower case. Lift the upper case unit and disconnect the LED cable from Connector CN8.

LED BOARD REMOVAL

Remove the upper case unit. Turn the upper case unit over and remove three screws holding the LED Board to the upper case. Remove the LED Board.

MECHANISM BLOCK REMOVAL/INSTALLATION

Remove the upper case unit. Remove the DIP Switch cover unit. Disconnect the flexible cable CN1 of the Print Head (M3). Remove two screws holding the mechanism block to the Lower Case assembly. Disconnect Connectors CN2 and CN3 of the Control Board. Unhook the four tabs of the lower case assembly and lift the mechanism block slightly and disconnect the sensor cable from Connector CN7 on the Control Board.

CONTROL BOARD REMOVAL

Remove the mechanism block. Disconnect Connector CN1 from the Power Supply Board. Remove eight screws holding the Control Board to the lower case assembly. Remove the Control Board.

POWER SUPPLY BOARD REMOVAL

Make sure that the Power On/Off Switch is Off and the line cord is not plugged into power. Remove the mechanism block. Disconnect Connector CN1 from the Power Supply Board. Remove four screws holding the Power Supply Board to the lower case assembly. Remove the Power Supply Board with the line cord attached.

TIMING BELT REMOVAL

Remove the frame ground wire on the right side. Turn the mechanism block over and unhook the return spring. Record the current

position of the Print Head Adjustment Lever R. Rotate it toward the front to pull it out with the Print Head Position Lever. Pull out the guide pillar to the right. Unhook four hooks of the top case front left to remove it. Remove the pulley step on the left side and remove the timing belt with the carrier. Detach the timing belt from the carrier. After replacing the timing belt apply lock-tite after installing the timing belt into the carrier. Set the Print Head Adjustment Lever R to the position recorded previously. Perform the self-test to check the print quality. Print Head Adjustment Lever R and L may need adjustment (See Miscellaneous Adjustments).

PRINT HEAD REMOVAL

Slide the DIP Switch cover to the left and remove. Pull out the Print Head flexible cable from Socket CN1. Pry off and remove the FPC guide with a flat edge screwdriver. Pull the Print Head (M3) toward the front and remove. After replacing the Print Head run self-test and check the print quality. Print Head Adjustment Lever R and L may need adjustment (See Miscellaneous Adjustments).

CARRIAGE MOTOR REMOVAL

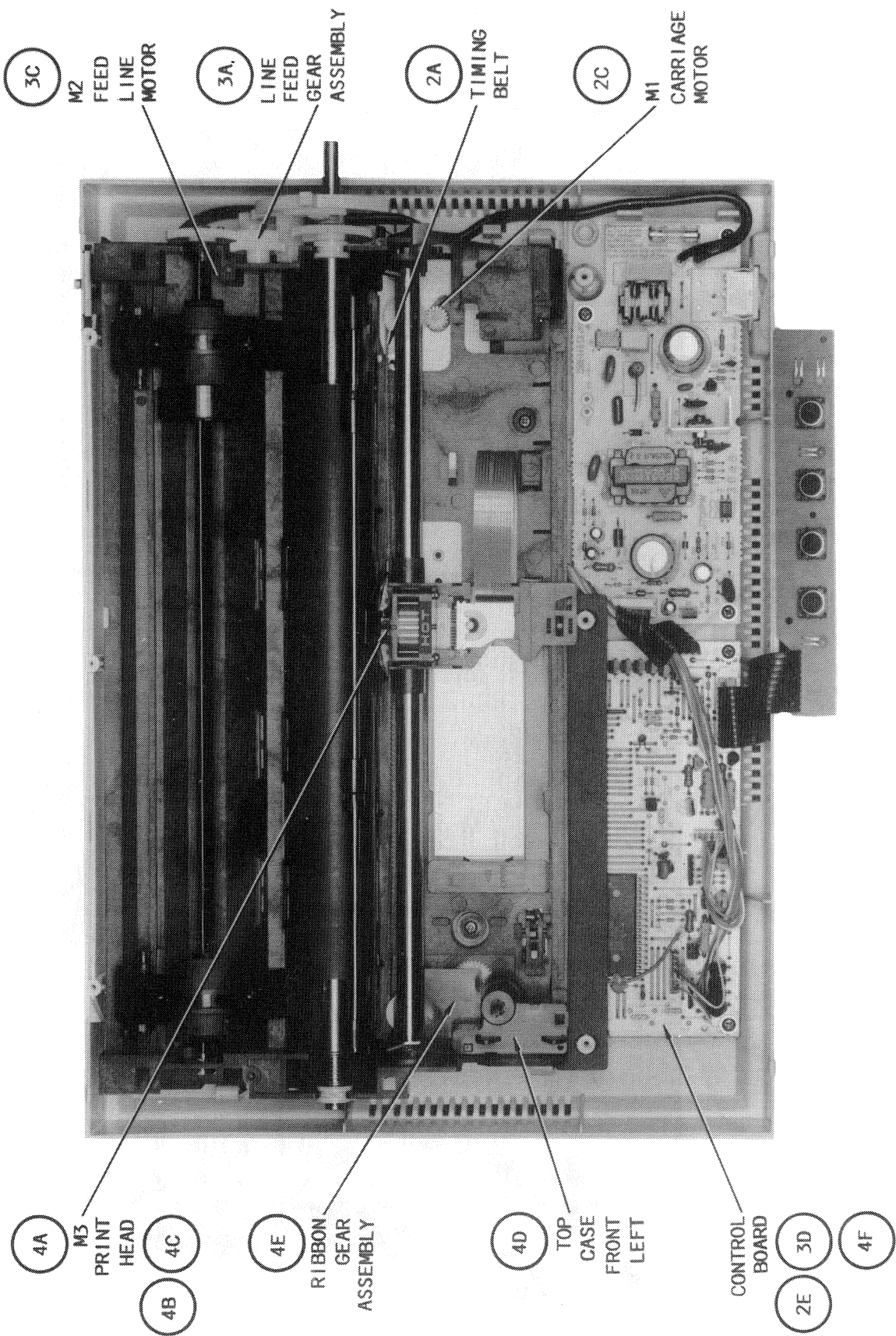
Remove the mechanism block. Remove the frame ground wire on the right side. Turn the mechanism block over and unhook the return spring. Remove two screws holding the Carriage Motor (M1) to the plate on the bottom of the mechanism block. Slide the Carriage Motor towards the right about 1/4 inch and remove.

LINE FEED MOTOR REMOVAL

Remove the mechanism block. Remove one screw holding the Line Feed Motor (M2) to the right side of the mechanism block. Slide the Line Feed Motor out of the mechanism block. When reinstalling the Line Feed Motor do not over tighten the screw.

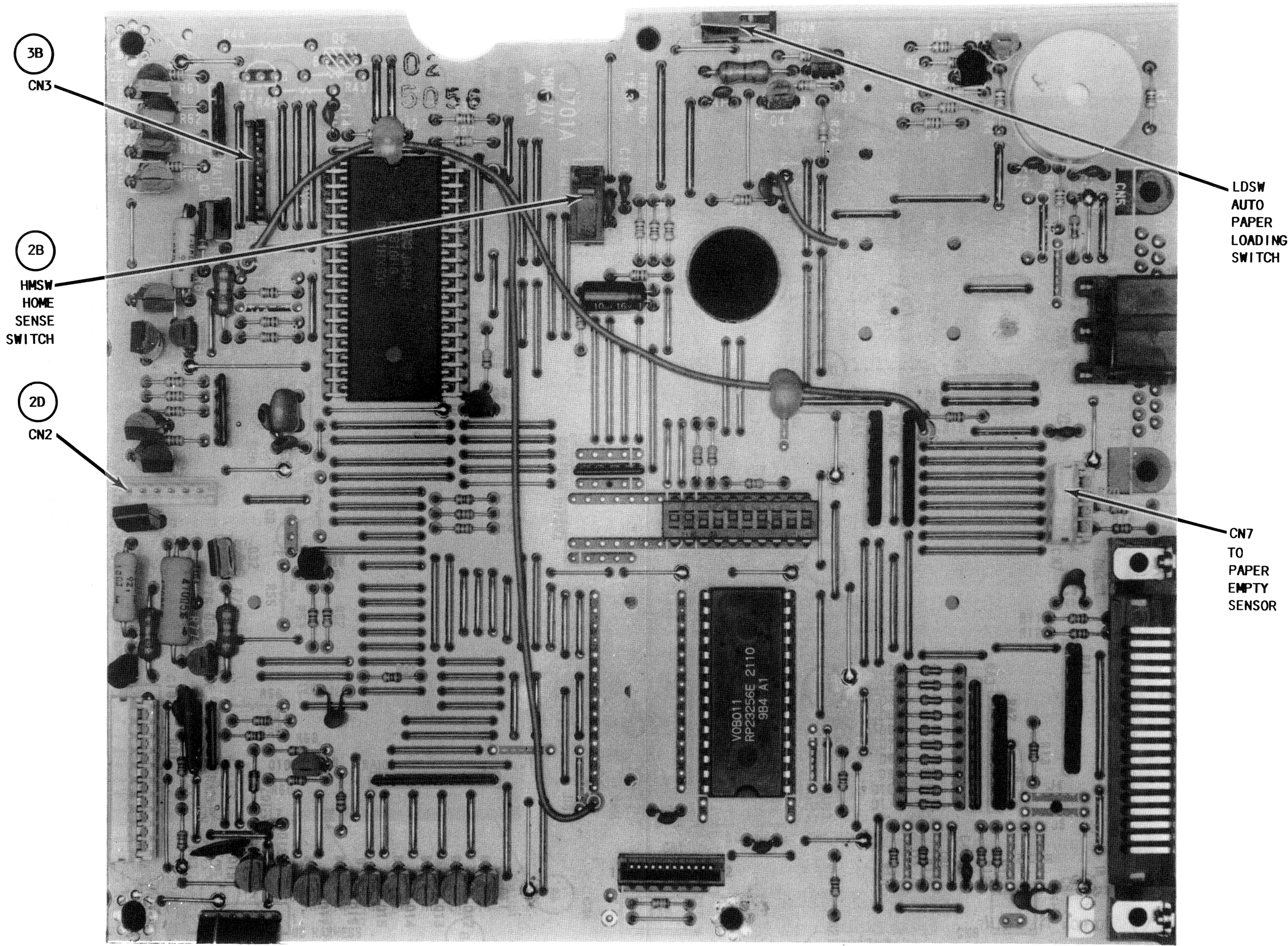
PRELIMINARY SERVICE CHECKS (Continued)

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CHASSIS-OVERALL VIEW

PRELIMINARY SERVICE CHECKS (Continued)



CONTROL BOARD-TOP VIEW

CONTROL BOARD-TOP VIEW

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PRELIMINARY SERVICE CHECKS (Continued)

PREVENTATIVE MAINTENANCE

ENVIRONMENT

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to maintain a smoke-free area around the Computer. Do not block cabinet vents of Computer, Monitor, Printer, or other power devices.

ELECTRICAL POWER

Variations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power-surge protector, power-line conditioner, or non-interruptible power supply may be needed to cure the problem. **Do not** switch power On and Off frequently.

KEYBOARD

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swab to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connectors and contacts.

DISK DRIVES

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit.

Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If Disk Drive must be transported, place an old disk in slot and close door during transport.

Store disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

PRINTERS

Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

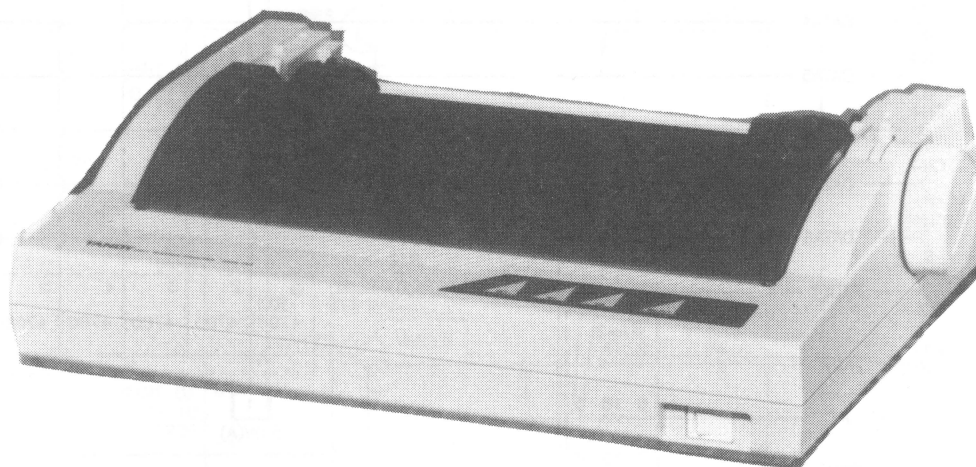
STATIC ELECTRICITY

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

MONITOR

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long period of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning anti-glare screens, to preserve the glare-reduction feature.

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SAFETY PRECAUTIONS

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PRELIMINARY SERVICE CHECKS

ENCLOSED

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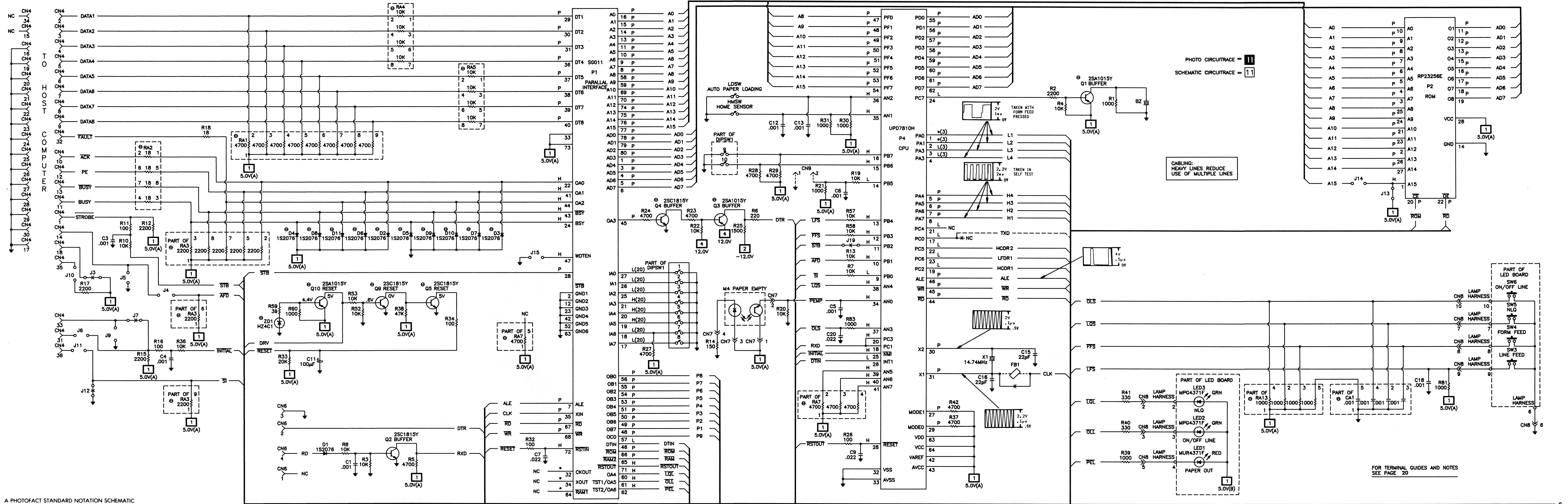
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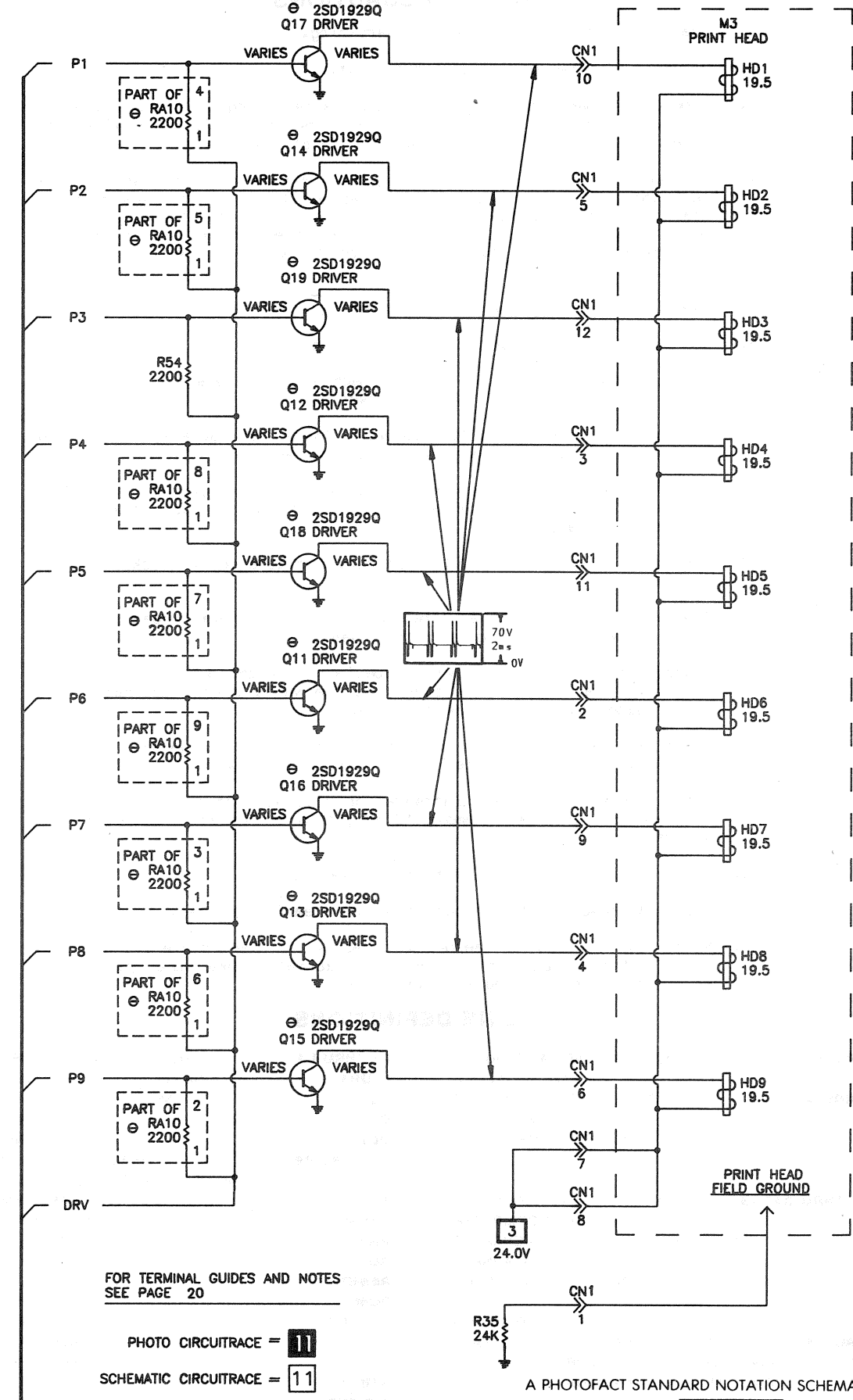
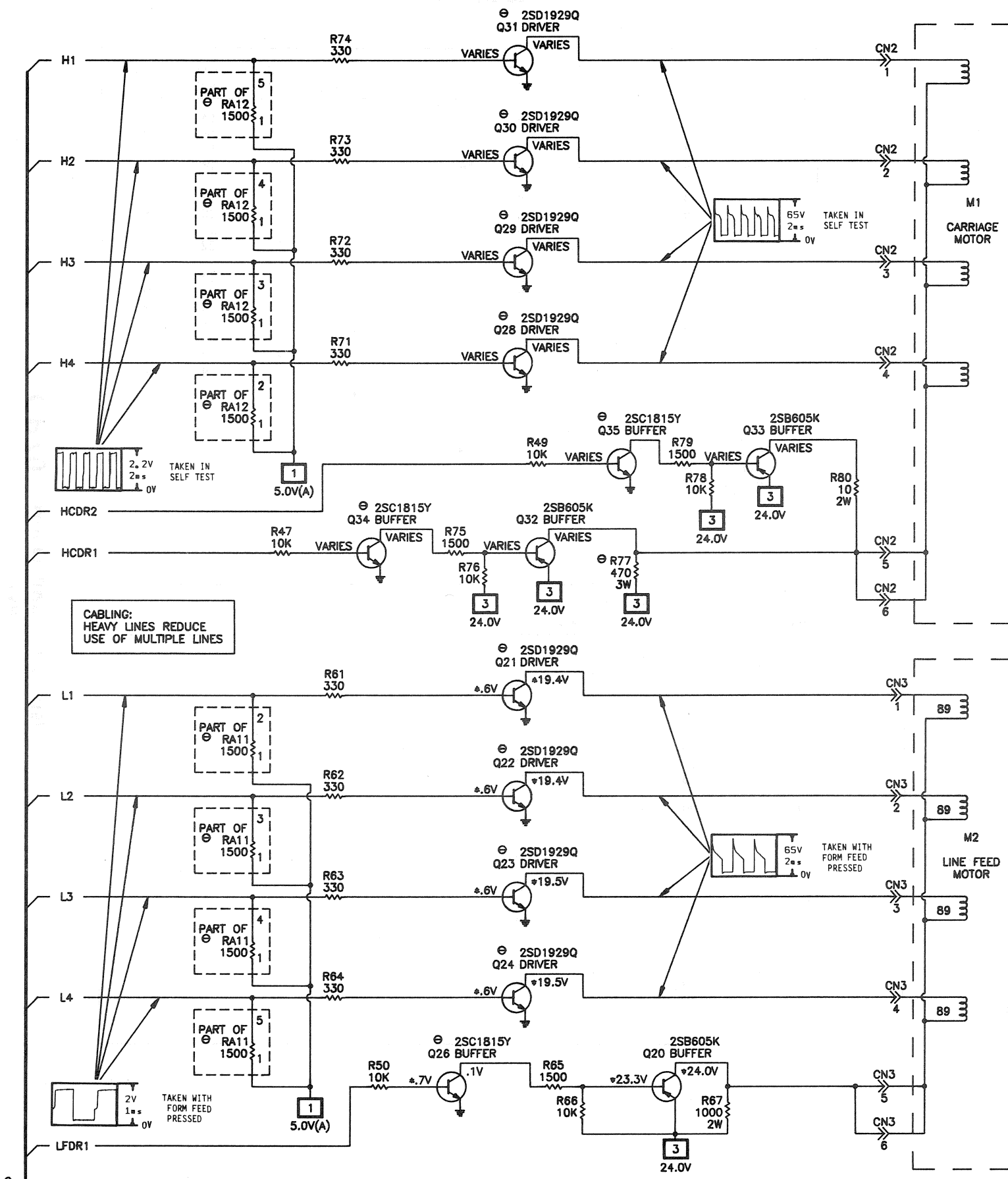
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co. by the manufacturers of the particular type of replacement part listed. **90CP19110** **DATE 4-90**

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SAFETY PRECAUTIONS

1. Use an Isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the Printer before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an Isolation (times 10) probe on scope.
7. Do not remove or install board, mechanical or electrical parts or other peripherals with Printer AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This Printer is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC power cord for damaged or cracked insulation.
11. The Printer cabinet is equipped with vents to prevent heat build-up. Never block, cover or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the Printer to water. If exposed to water, turn the unit Off. Do not place the Printer near possible water sources.
14. Never leave the Printer unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
15. Do not allow anything to rest on AC power cord.
16. Unplug AC power cord from outlet before cleaning Printer.
17. Never use liquids or aerosols directly on the Printer. Spray on cloth and then apply to the Printer cabinet. Make sure the Printer is disconnected from the AC power line.

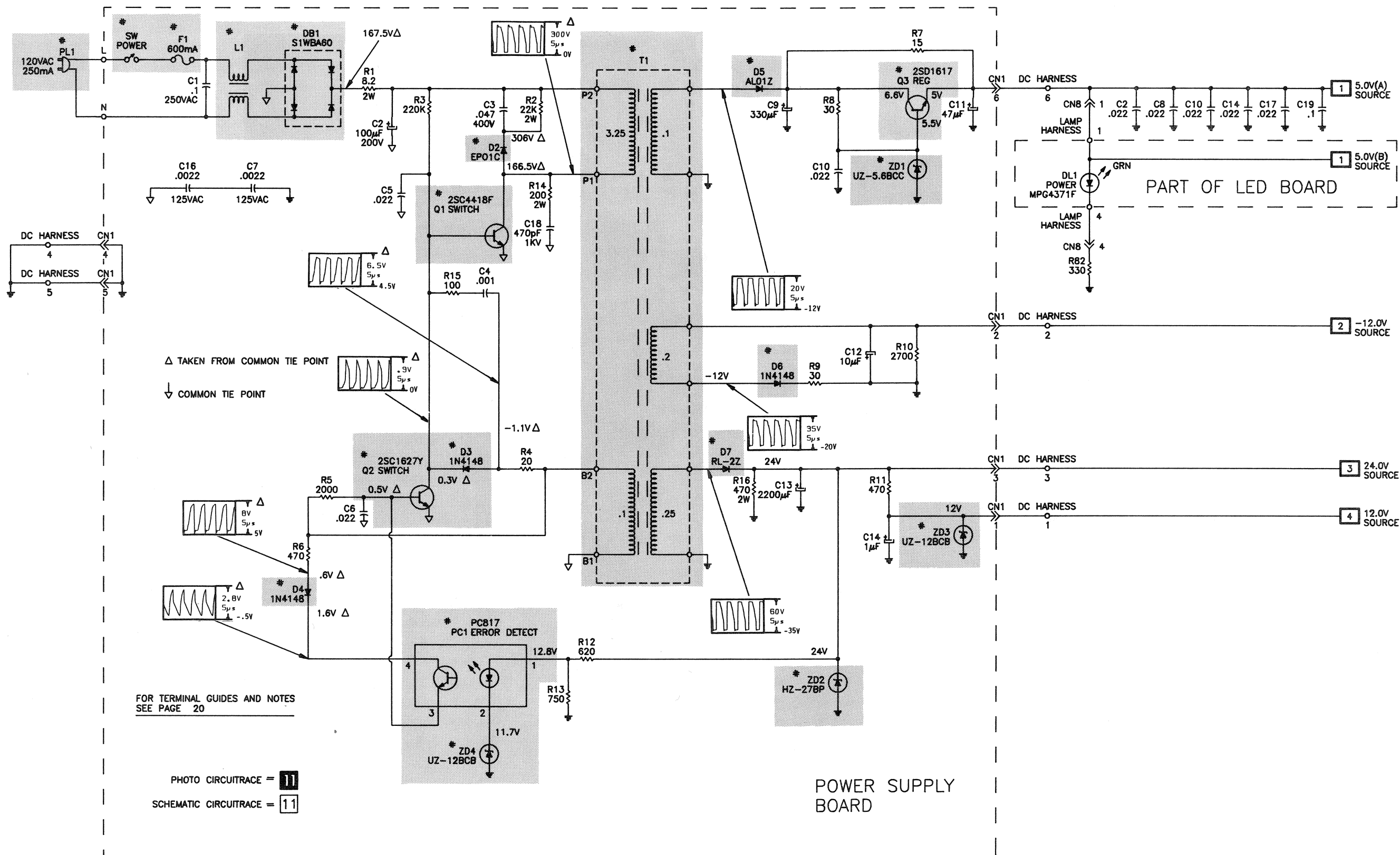
LINE DEFINITIONS

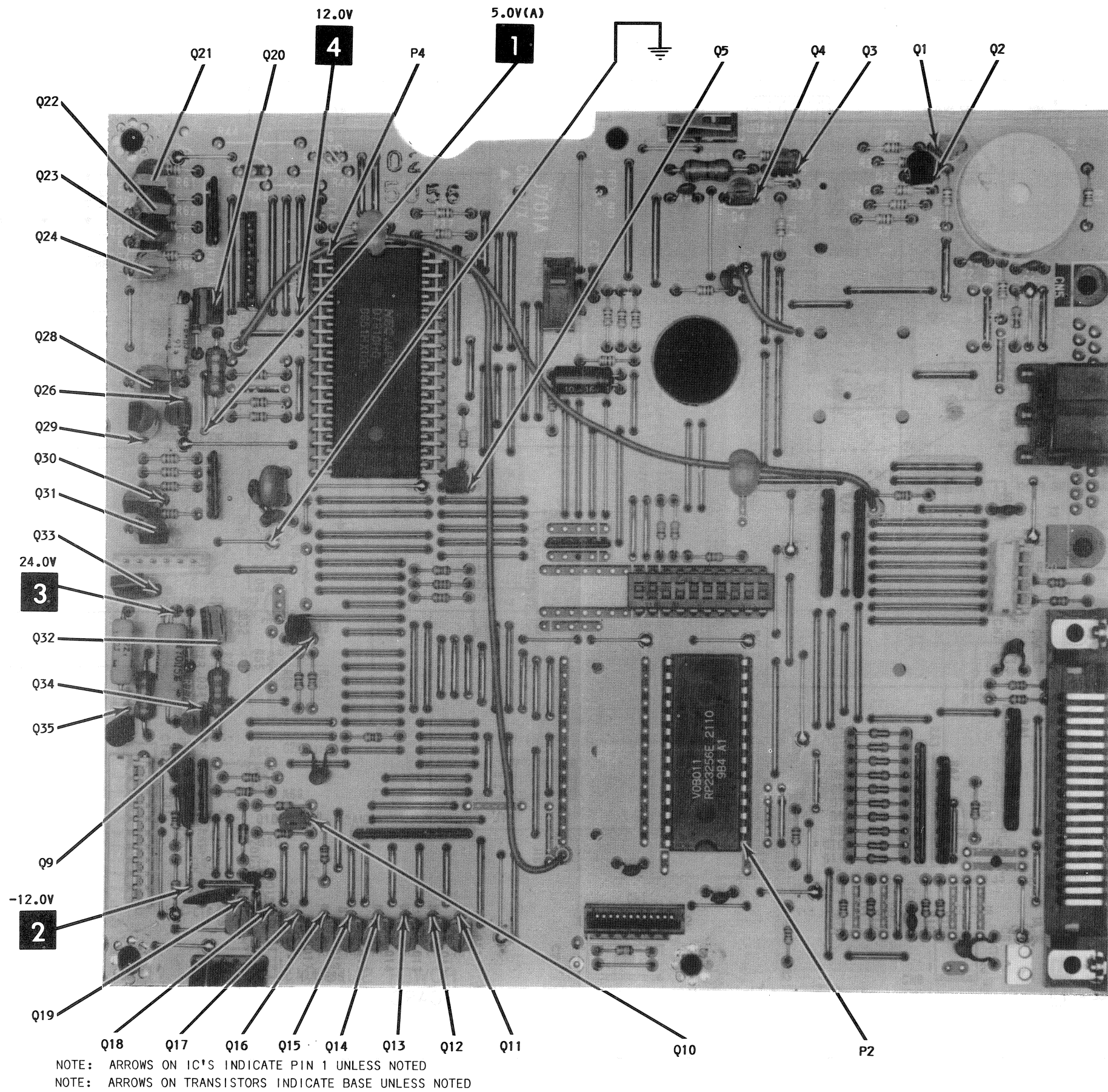
A0 THRU A15	ADDRESS LINES A0 THRU A15
ACK	ACKNOWLEDGE
AD0 THRU AD7	DATA LINES AD0 THRU AD7
AFD	AUTOMATIC SHEET FEED
ALE	ADDRESS LATCH ENABLE
BUSY	BUSY
CLK	CLOCK
DATA1 THRU DATA8	DATA LINES DATA1 THRU DATA8 FROM HOST COMPUTER
DRV	PRINT HEAD DRIVERS ENABLED
DTIN	DATA INPUT
DTR	DATA TERMINAL READY
FAULT	FAULT
FFS	FORM FEED SWITCH
H1 THRU H4	CARRIAGE MOTOR PHASE SIGNALS
HCDR1	CARRIAGE MOTOR COMMON DRIVER 1 ENABLE
HCDR2	CARRIAGE MOTOR COMMON DRIVER 2 ENABLE
INITIAL	INITIALIZE
LFS	LINE FEED SWITCH
LQL	NEAR LETTER QUALITY LED

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L1 THRU L4 ..... LINE FEED MOTOR PHASE SIGNALS
LFDR1 ..... LINE FEED COMMON DRIVER ENABLE
LQS ..... NEAR LETTER QUALITY SWITCH
OLL ..... ON LINE LED
OLS ..... ON LINE SENSOR
P1 THRU P9 ..... PRINT HEAD PIN 1 THRU PIN 9 FIRE
PE ..... PAPER EMPTY SIGNAL TO THE HOST COMPUTER
PEL ..... PAPER EMPTY LED
PEMP ..... PAPER EMPTY SENSOR
RAM ..... RAM CHIP ENABLE
RD ..... READ
RESET ..... RESET
ROM ..... ROM CHIP ENABLE
RSTOUT ..... CPU RESET OUTPUT
RXD ..... READY TRANSIT DATA
SI ..... SERIAL INTERFACE
STB ..... STROBE
STROBE ..... STROBE
TXD ..... TRANSMIT DATA
WR ..... WRITE

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CONTROL BOARD-TOP VIEW

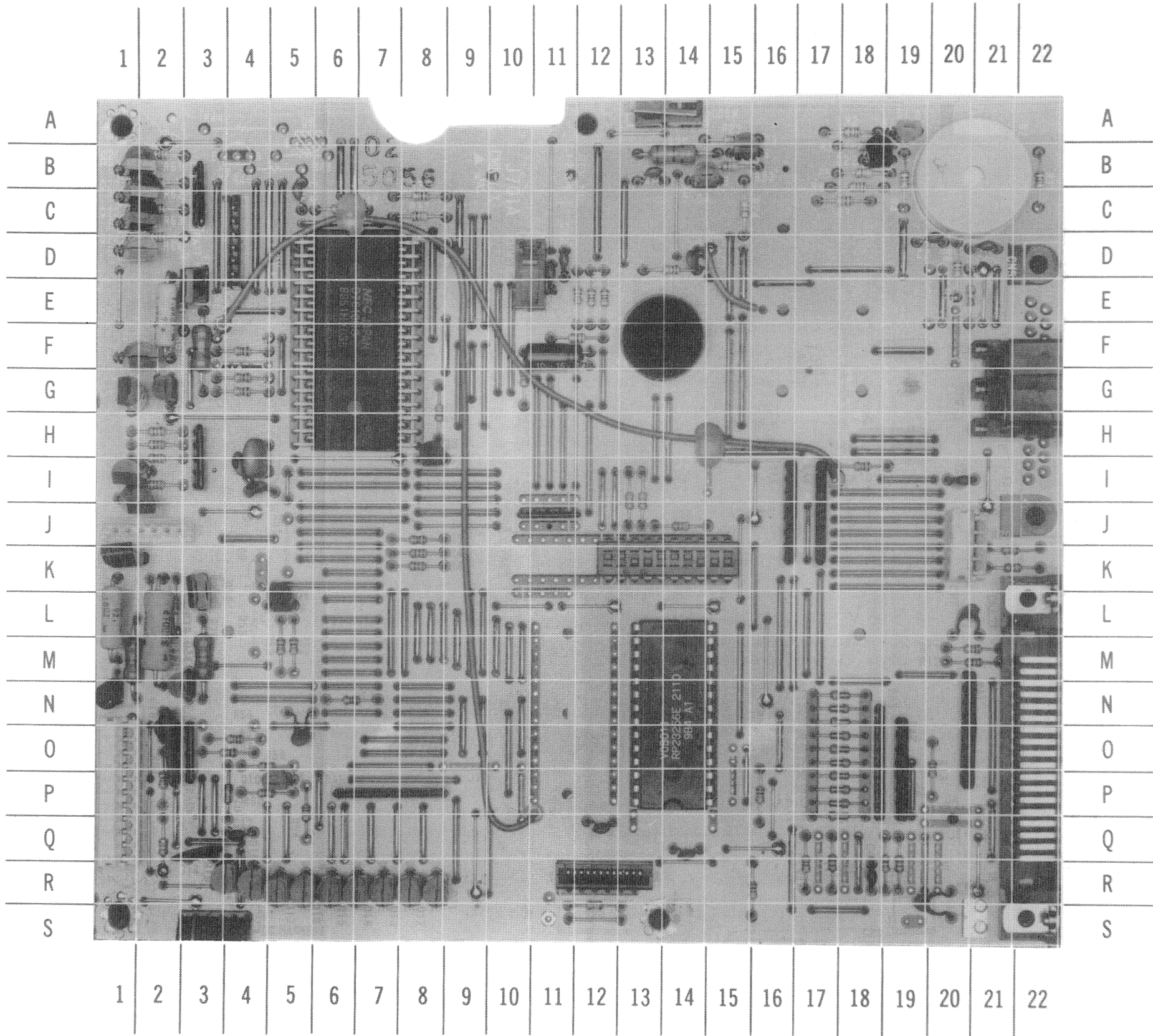
A Howard W. Sams CIRCUITRACE® Photo

CONTROL BOARD-TOP VIEW

CONTROL BOARD-TOP VIEW-
GridTrace LOCATION GUIDE

BZ	B-21	Q16	R-5	R65	F-3
C1	D-21	Q17	R-5	R66	E-2
C2	D-20	Q18	R-4	R67	E-2
C3	L-20	Q19	R-3	R71	H-2
C4	R-18	Q20	E-3	R72	H-2
C5	I-20	Q21	B-1	R73	I-2
C6	R-20	Q22	B-1	R74	I-2
C7	D-14	Q23	C-1	R75	M-3
C8	Q-14	Q24	D-1	R76	L-2
C9	B-13	Q26	G-2	R77	L-2
C10	Q-12	Q28	F-1	R78	L-2
C11	F-11	Q29	G-1	R79	M-1
C12	D-11	Q30	I-1	R80	L-1
C13	D-11	Q31	I-1	R81	P-2
C14	C-5	Q32	K-3	R82	Q-2
C15	I-4	Q33	K-1	R83	N-6
C16	I-4	Q34	N-3	RA1	N-21
C17	Q-4	Q35	N-1	RA2	O-19
C18	Q-2	R1	B-22	RA3	O-18
C19	Q-3	R2	A-18	RA4	I-17
C20	O-5	R3	B-18	RA5	I-16
CA1	O-2	R4	B-19	RA7	J-11
CN1	R-12	R5	B-18	RA10	P-7
CN2	J-2	R6	B-18	RA11	C-3
CN3	D-4	R7	C-18	RA12	H-3
CN4	O-22	R8	D-20	RA13	O-3
CN6	G-22	R10	I-18	X1	H-4
CN7	K-20	R11	M-21	ZD1	P-4
CN8	P-1	R12	M-21		
D1	E-21	R13	P-20		
D2	N-18	R14	K-21		
D3	N-18	R15	R-19		
D4	N-18	R16	R-19		
D5	O-18	R17	R-17		
D6	O-18	R18	R-17		
D7	O-18	R19	P-16		
D8	P-18	R20	K-21		
D9	P-18	R21	R-16		
D10	P-18	R22	A-15		
D11	Q-18	R23	B-15		
DIP SW1	K-14	R24	C-15		
HMSW	D-10	R25	B-14		
J3	Q-21	R26	D-14		
J4	P-20	R27	J-14		
J5	R-20	R28	I-13		
J6	R-20	R29	I-13		
J7	R-20	R30	E-12		
J9	R-19	R31	E-12		
J10	R-18	R32	E-12		
J11	R-17	R33	F-11		
J12	O-16	R34	G-10		
J13	P-15	R35	S-12		
J14	P-15	R36	C-8		
J15	I-15	R37	C-8		
J16	P-10	R38	G-8		
J17	Q-9	R39	J-8		
J19	E-4	R40	K-8		
LDSW	A-14	R41	K-8		
P1	F-17*	R42	C-6		
P2	P-14	R47	F-4		
P4	D-6	R49	G-4		
Q1	A-19	R50	G-4		
Q2	B-18	R52	M-5		
Q3	B-15	R53	M-5		
Q4	B-14	R54	Q-5		
Q5	H-8	R57	O-4		
Q9	L-5	R58	O-4		
Q10	P-5	R59	O-5		
Q11	R-8	R60	P-4		
Q12	R-8	R61	B-2		
Q13	R-7	R62	B-2		
Q14	R-7	R63	C-2		
Q15	R-6	R64	D-2		

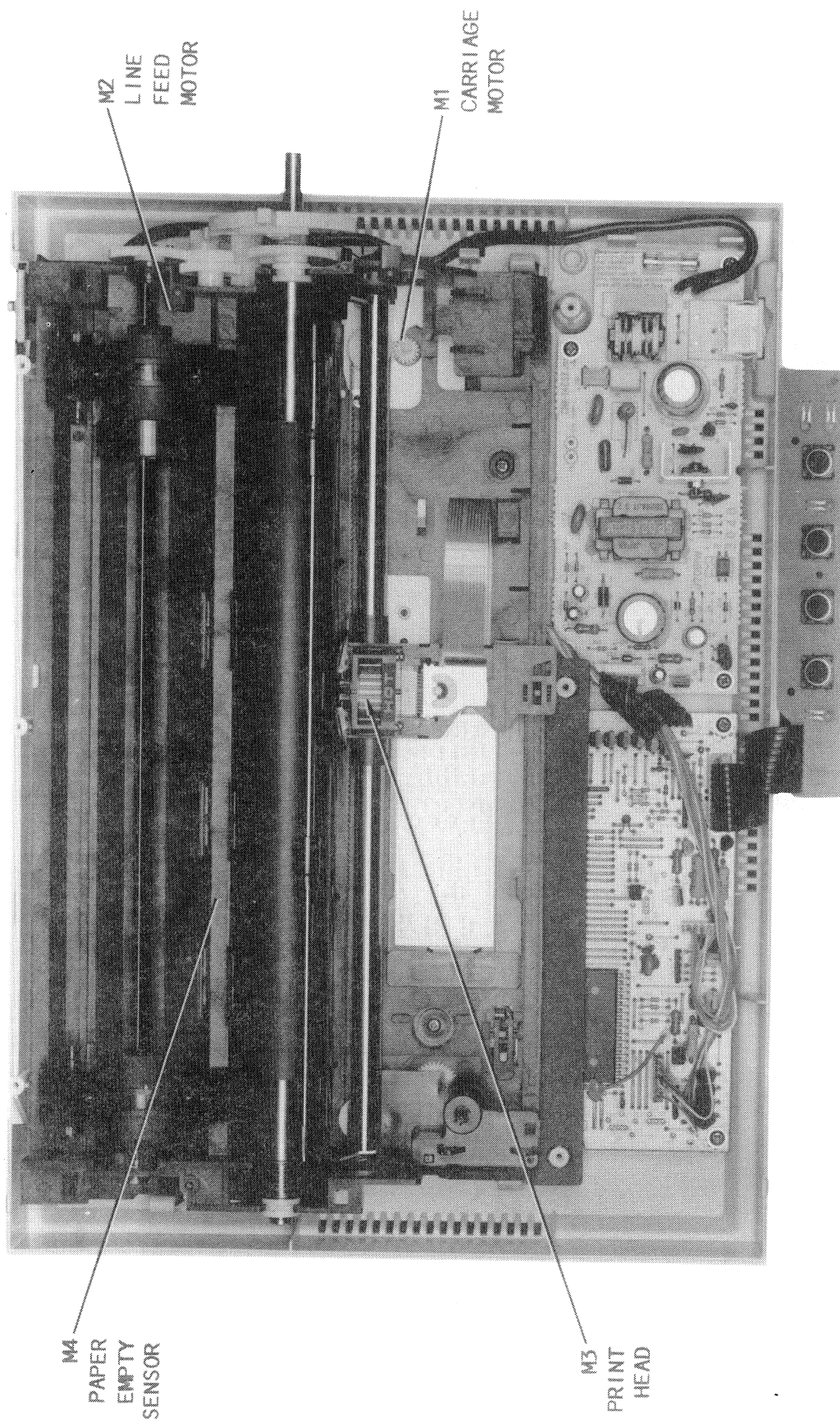
*Located on bottom
of board.



CONTROL BOARD-TOP VIEW

A Howard W. Sams GRIDTRACE™ Photo CONTROL BOARD-TOP VIEW

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TANDY



CHASSIS-OVERALL VIEW

MISCELLANEOUS ADJUSTMENTS

SELF-TEST

To run self-test, press and hold the LINE FEED Switch while setting the POWER Switch On. The printer will print the self-test in standard font. If the NLQ Switch is pressed instead of the LINE FEED Switch, the test will be printed in the Quality font.

PRINT HEAD PLATEN GAP ADJUSTMENT

The Print Head Position Lever is located on the right side of the platen, it is used to adjust the Print Head (M3) according to paper thickness variations. When the gap is too narrow, it can cause smudging in the printout, paper damage at the left or the right margin,

or inaccurate line feeding. If the gap is too wide, it can cause light printing or missing characters. When the Print Head Position Lever is pushed all the way towards the platen it is set to position 1. When the lever is pulled away from the platen it is set to position 7. Perform the self-test in the Standard Character Mode, when the Print Head Position Lever is at positions 2, 3, and 4. If smudging appears, or dot missing at positions 2, 3, and 4 on the right side or on the left side, rotate the Print Head Adjustment Lever R or the Print Head Adjustment Lever L until there is no smudge and no dot missing. Run the self-test and check the print quality. The adjustment is complete when print quality is satisfactory.

DISASSEMBLY INSTRUCTIONS

UPPER CASE UNIT REMOVAL

Remove the printer cover, the paper rack assembly and the paper feed knob. Move the Print Head (M3) to the position of the front cutout of the upper case unit. Remove six screws holding the upper case to the lower case. Lift the upper case unit and disconnect the LED cable from Connector CN8.

LED BOARD REMOVAL

Remove the upper case unit. Turn the upper case unit over and remove three screws holding the LED Board to the upper case. Remove the LED Board.

MECHANISM BLOCK REMOVAL/INSTALLATION

Remove the upper case unit. Remove the DIP Switch cover unit. Disconnect the flexible cable CN1 of the Print Head (M3). Remove two screws holding the mechanism block to the Lower Case assembly. Disconnect Connectors CN2 and CN3 of the Control Board. Unhook the four tabs of the lower case assembly and lift the mechanism block slightly and disconnect the sensor cable from Connector CN7 on the Control Board.

CONTROL BOARD REMOVAL

Remove the mechanism block. Disconnect Connector CN1 from the Power Supply Board. Remove eight screws holding the Control Board to the lower case assembly. Remove the Control Board.

POWER SUPPLY BOARD REMOVAL

Make sure that the Power On/Off Switch is Off and the line cord is not plugged into power. Remove the mechanism block. Disconnect Connector CN1 from the Power Supply Board. Remove four screws holding the Power Supply Board to the lower case assembly. Remove the Power Supply Board with the line cord attached.

TIMING BELT REMOVAL

Remove the frame ground wire on the right side. Turn the mechanism block over and unhook the return spring. Record the current

position of the Print Head Adjustment Lever R. Rotate it toward the front to pull it out with the Print Head Position Lever. Pull out the guide pillar to the right. Unhook four hooks of the top case front left to remove it. Remove the pulley step on the left side and remove the timing belt with the carrier. Detach the timing belt from the carrier. After replacing the timing belt apply lock-tite after installing the timing belt into the carrier. Set the Print Head Adjustment Lever R to the position recorded previously. Perform the self-test to check the print quality. Print Head Adjustment Lever R and L may need adjustment (See Miscellaneous Adjustments).

PRINT HEAD REMOVAL

Slide the DIP Switch cover to the left and remove. Pull out the Print Head flexible cable from Socket CN1. Pry off and remove the FPC guide with a flat edge screwdriver. Pull the Print Head (M3) toward the front and remove. After replacing the Print Head run self-test and check the print quality. Print Head Adjustment Lever R and L may need adjustment (See Miscellaneous Adjustments).

CARRIAGE MOTOR REMOVAL

Remove the mechanism block. Remove the frame ground wire on the right side. Turn the mechanism block over and unhook the return spring. Remove two screws holding the Carriage Motor (M1) to the plate on the bottom of the mechanism block. Slide the Carriage Motor towards the right about 1/4 inch and remove.

LINE FEED MOTOR REMOVAL

Remove the mechanism block. Remove one screw holding the Line Feed Motor (M2) to the right side of the mechanism block. Slide the Line Feed Motor out of the mechanism block. When reinstalling the Line Feed Motor do not over tighten the screw.

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GENERAL OPERATING INSTRUCTIONS

POWER LIGHT

The Power light comes On when the printer is properly connected to 120VAC power and the Power On/Off switch is set On.

PAPER OUT LIGHT

The Paper Out light will come on when the printer is out of paper. The Paper Out light blinks when there is a hardware fault.

ON/OFF LINE LIGHT

The On/Off Line light will be On when the printer is On line and ready. On/Off Line light will blink in the Pitch-set Mode.

NLQ LIGHT

The NLQ light will be turned On when the printer is in NLQ Mode.

ON/OFF LINE SWITCH

At Power Up the printer is On Line and ready to print. When the On/Off Line switch is pressed once the printer will go Off Line. Press and hold this switch for a moment while in On Line Mode to enter the Pitch-set Mode.

NLQ SWITCH

The NLQ switch selects either NLQ or standard print mode. In the Pitch-set Mode, pressing this switch sets the pitch.

FORM FEED SWITCH

The Form Feed switch will advance the paper to the next top-of-form position. This switch works only when the printer is Off Line. In the Pitch-set Mode, pressing this switch moves the Print Head to the left.

LINE FEED SWITCH

The Line Feed switch will advance the paper one line. For continuous paper feed press and hold this switch. In the Pitch-set Mode, pressing this switch moves the Print Head to the right.

CHARACTER PITCH SET SWITCHES

Character Pitch can be set by either of two methods:

1. Front Panel Method. In this case any control code from the host computer will have no effect on the printing. To select the character pitch using the front panel, set the printer in On Line Mode. Press and hold the On/Off Line switch until the On Line Indicator blinks. Press the Line Feed or Form Feed switch to move the print head to the position indicated on the print cover, Pica 10, Elite 12, Condensed 17, Microfont 17 or Proportional, to select a character pitch. Press the NLQ switch to set the selected character pitch.

2. By using control codes from the host computer.

DIP SWITCH FUNCTIONS

NOTE: Power must be removed from the printer before changing Dip Switch settings.

DIPSW 1

DIPSW1-1 CONTROL CODES

DIPSW1-1 is set Off for the printer to select TANDY Mode.

DIPSW1-2 is set On for the printer to select IBM Mode.

DIPSW1-2 CARRIAGE RETURN

DIPSW1-2 if set On, carriage return only on carriage return.

DIPSW1-2 if set Off, carriage return and line feed on carriage return.

DIPSW1-3 LINE FEED

DIPSW1-3 if set Off, line feed will be with every carriage return.

DIPSW1-3 if set On, line feed will be performed without carriage return.

DIPSW1-4 FORM LENGTH

DIPSW1-4 is set On for form length of 12 inches.

DIPSW1-4 is set Off for form length of 11 inches.

DIPSW1-5 PERFORATION

DIPSW1-5 1 inch skip perforation.

DIPSW1-5 is set On for valid perforation.

DIPSW1-5 is set Off for not valid perforation.

DIPSW1-6 LINE SPACING

DIPSW1-6 if set On, line spacing will be 1/8 inch.

DIPSW1-6 if set Off, line spacing will be 1/6 inch.

DIPSW1-7 CHARACTER SET

If DIPSW1-1 is Off, DIPSW1-7 will select between IBM and TANDY characters. If DIPSW1-7 is On, IBM character set is selected. If DIPSW1-7 is Off, TANDY character set is selected.

If DIPSW1-1 is On, DIPSW1-7 will select between IBM character set 1 and 2. If DIPSW1-7 is On, IBM character set 1 is selected. If DIPSW1-7 is Off, IBM character set 2 is selected.

GENERAL OPERATING INSTRUCTIONS (Continued)

DIPSW1-8 IN TANDY MODE WP/DP MODE

If DIPSW1-8 Is On, Word Processing Mode Is selected.

If DIPSW1-8 Is Off, Data Processing Mode Is selected.

DIPSW1-8 in IBM Mode, Buffer Full.

If DIPSW1-8 Is Off, the printer will do carriage return only.

If DIPSW1-8 Is On, the printer will do carriage return and line feed.

DIPSW1-9 AND DIPSW1-10

DIPSW1-9 and DIPSW1-10 select the Interface and baud rate for serial Interface.

	Serial 600bd	Serial 1200bd	Serial 2400bd
PARALLEL			
DIPSW1-9 Off	Off	On	On
DIPSW1-10 Off	On	Off	On

INSTALLING THE PAPER RACK

To install the paper rack on the printer, open the printer cover. Hold the paper rack upright, insert the tips of the rack on the supporters on both sides of the printer on top cover. For single sheet printing pull up the folding leg and insert it into the hole centered on top of the case. For printing on continuous fanfold paper place the rack in its horizontal position.

INSTALLING TRACTOR FEED UNIT

To install the tractor feed, set the printer power switch Off, remove the paper rack and open the printer cover. Place the front pins into the holes then push down on the rear of the tractor unit until the tractor is secured in position. Turn the platen knob clockwise to move the paper bail toward the platen.

HOME SENSE

When the carriage assembly pushes against the microswitch of the Home Sense, the microswitch is turned On causing pin 35 of the CPU IC (P4) to go logic Low.

PAPER EMPTY DETECTOR

The Paper Empty Detector is a photo sensor activated by the reflections of light produced by the LED in that sensor. When paper reflects the light the sensor transistor is turned On and pin 34 of the CPU IC (P4) will check logic High. If the printer runs out of paper the sensor transistor will be turned Off and pin 34 of the CPU IC (P4) will check logic Low.

AUTOMATIC PAPER LOADING SWITCH

The Automatic Paper Loading Switch is a microswitch which can be activated by turning the Paper Loading Knob counterclockwise. When the microswitch is On, pin 36 of the CPU IC (P4) checks logic Low.

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TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

TEST EQUIPMENT

Equipment	B & K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1570A,1590A,1596	SC61	
LOGIC PROBE	DP51,DP21		
LOGIC PULSER	DP101,DP31		
DIGITAL VOM	2830,2806	DVM37,DVM56,SC61	
ANALOG VOM	277,111,116		
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57	
FREQUENCY COUNTER	1803,1805	FC71,SC61	
COLOR BAR GENERATOR	1211A,1251,1260,1249	CG25,VA62	
RGB GENERATOR	1260,1249		
FUNCTION GENERATOR	3020,3011,3030		
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200	
TEMPERATURE PROBE	TP-28,TP-30		
CRT ANALYZER	467,470	CR70	
DIGITAL IC TESTER	560,550,552		
CAPACITANCE ANALYZER		LC53,LC75,LC76 LC77	
INDUCTANCE ANALYZER		LC53,LC75,LC76 LC77	

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
	<u>CONTROL BOARD</u>				
D1 THRU D11	1S2076	NTE519	ECG519	SK3100/519	
	8409-11102	NTE519	ECG519	SK3100/519	
	1S2076A	NTE519	ECG519	SK3100/519	
	8409-11103	NTE519	ECG519	SK3100/519	
	1N4148	NTE519	ECG519	SK3100/519	
	8409-11138	NTE519	ECG519	SK3100/519	
P1	SG011				
P2	8409-10718				
	VB011				
	RP23256E-2110				
	8409-10468				
	MBM27256-XX				-XX 20 And Below
	10410-V0B011				
	TMS27256JL-XX				
	10410-V0B011-1				
	HN27256G-XX				
	10410-V0B011-2				
	M5L27256K-X				-X 2 And Below
	10410-V0B011-3				
	TMM27256AD-XX				
	10410-V0B011-4				
	UPD27256AD-X				
	[uPD27256AD-X]				
	10410-V0B011-5				
	D27256-XX				
	10410-V0B011-6				
	27256-XX				
	10410-V0B011-7				
	27C256-XX				
	10410-V0B011-8				
P4	D7810HG				
	UPD7810H				
	UPD7810HG				
	[uPD7810HG]				
	8409-10136				
Q1	A1015Y	NTE290A	ECG290A	SK9132	
	2SA1015Y	NTE290A	ECG290A	SK9132	
	8409-07004	NTE290A	ECG290A	SK9132	
	2SA933S	NTE290A	ECG290A	SK9132	
	8409-07004-1	NTE290A	ECG290A	SK9132	
	HSA1015	NTE290A	ECG290A	SK9132	
	8409-07004-2	NTE290A	ECG290A	SK9132	
	2SA1266GR			SK9132	
	2SA1266Y			SK9132	
	8409-07004-3			SK9132	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFG. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
Q2	C1815Y	NTE85	ECG85	SK3124A/289A	
	2SC1815Y	NTE85	ECG85	SK3124A/289A	
	8409-07211	NTE85	ECG85	SK3124A/289A	
	HSC1815	NTE85	ECG85	SK3124A/289A	
	8409-07211-1	NTE85	ECG85	SK3124A/289A	
	2SC1740S	NTE85	ECG85	SK3122	
	8409-07211-2	NTE85	ECG85	SK3122	
	2SC3198GR	NTE85	ECG85	SK9229/85	
	2SC3198Y	NTE85	ECG85	SK9229/85	
	8409-07211-3	NTE85	ECG85	SK9229/85	
Q3	A1015Y	NTE290A	ECG290A	SK9132	
	2SA1015Y	NTE290A	ECG290A	SK9132	
	8409-07004	NTE290A	ECG290A	SK9132	
	2SA933S	NTE290A	ECG290A	SK9132	
	8409-07004-1	NTE290A	ECG290A	SK9132	
	HSA1015	NTE290A	ECG290A	SK9132	
	8409-07004-2	NTE290A	ECG290A	SK9132	
	2SA1266GR			SK9132	
	2SA1266Y			SK9132	
	8409-07004-3			SK9132	
Q4,5,9	C1815Y	NTE85	ECG85	SK3124A/289A	
	2SC1815Y	NTE85	ECG85	SK3124A/289A	
	8409-07211	NTE85	ECG85	SK3124A/289A	
	HSC1815	NTE85	ECG85	SK3124A/289A	
	8409-07211-1	NTE85	ECG85	SK3124A/289A	
	2SC1740S	NTE85	ECG85	SK3122	
	8409-07211-2	NTE85	ECG85	SK3122	
	2SC3198GR	NTE85	ECG85	SK9229/85	
	2SC3198Y	NTE85	ECG85	SK9229/85	
	8409-07211-3	NTE85	ECG85	SK9229/85	
Q10	A1015Y	NTE290A	ECG290A	SK9132	
	2SA1015Y	NTE290A	ECG290A	SK9132	
	8409-07004	NTE290A	ECG290A	SK9132	
	2SA933S	NTE290A	ECG290A	SK9132	
	8409-07004-1	NTE290A	ECG290A	SK9132	
	HSA1015	NTE290A	ECG290A	SK9132	
	8409-07004-2	NTE290A	ECG290A	SK9132	
	2SA1266GR			SK9132	
	2SA1266Y			SK9132	
	8409-07004-3			SK9132	
Q11 THRU Q19	D1929Q				
	2SD1929Q				
	D1929				
	2SD1929				
	8409-07321				
	2SD1929TP				
	8409-07321-1				
	2SD1843				
	8409-07319				

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TANDY

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
Q20	B605K 2SB605K B605 2SB605 8409-07100 2SB984 8409-07100-1	NTE294 NTE294 NTE294 NTE294 NTE294 NTE32 NTE32	ECG294 ECG294 ECG294 ECG294 ECG294 ECG32 ECG32	SK3841/294 SK3841/294 SK3841/294 SK3841/294 SK3841/294 SK3867A/32 SK3867A/32	
Q21 THRU Q24	D1929Q 2SD1929Q D1929 2SD1929 8409-07321 2SD1929TP 8409-07321-1 2SD1843 8409-07319				
Q26	C1815Y 2SC1815Y 8409-07211 HSC1815 8409-07211-1 2SC1740S 8409-07211-2 2SC3198GR 2SC3198Y 8409-07211-3	NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85	ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85	SK3124A/289A SK3124A/289A SK3124A/289A SK3124A/289A SK3124A/289A SK3122 SK3122 SK9229/85 SK9229/85 SK9229/85	
Q28 THRU Q31	D1929Q 2SD1929Q D1929 2SD1929 8409-07321 2SD1929TP 8409-07321-1 2SD1843 8409-07319				
Q32,3	B605K 2SB605K B605 2SB605 8409-07100 2SB984 8409-07100-1	NTE294 NTE294 NTE294 NTE294 NTE294 NTE32 NTE32	ECG294 ECG294 ECG294 ECG294 ECG294 ECG32 ECG32	SK3841/294 SK3841/294 SK3841/294 SK3841/294 SK3841/294 SK3867A/32 SK3867A/32	
Q34,5	C1815Y 2SC1815Y 8409-07211 HSC1815 8409-07211-1 2SC1740S 8409-07211-2 2SC3198GR 2SC3198Y 8409-07211-3	NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85 NTE85	ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85 ECG85	SK3124A/289A SK3124A/289A SK3124A/289A SK3124A/289A SK3124A/289A SK3122 SK3122 SK9229/85 SK9229/85 SK9229/85	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
ZD1	HZ4C1 8409-12023 UZ4.7BCA 8409-12023-1 <u>POWER SUPPLY BOARD</u>	NTE5008A NTE5008A NTE5009A NTE5009A	ECG5008A ECG5008A ECG5009A ECG5009A	SK4A3/5008A SK4A3/5008A SK4A7/5009A SK4A7/5009A	
D2	EP01C 8409-11389				#
D3,4	1N4148 8409-11138 1S2076A 8409-11103	NTE519 NTE519 NTE519 NTE519	ECG519 ECG519 ECG519 ECG519	SK3100/519 SK3100/519 SK3100/519 SK3100/519	#
D5	AL01Z 8409-11303 D1NL20 8409-11303-1				#
D6	1N4148 8409-11138 1S2076A 8409-11103	NTE519 NTE519 NTE519 NTE519	ECG519 ECG519 ECG519 ECG519	SK3100/519 SK3100/519 SK3100/519 SK3100/519	#
D7	RL-2Z 8409-11346				#
DB1	S1WBA60 8409-11206	NTE5332 NTE5332	ECG5332 ECG5332	SK9232/5332 SK9232/5332	#
PC1	PC817 PC-817BC PC817BC 8409-07502			SK9763 SK9763 SK9763 SK9763	#
Q1	C4418 2SC4418 C4418Y 2SC4418Y 2SC4418Y-F 8409-07223				#
Q2	C1627Y 2SC1627Y 8409-07213	NTE289A NTE289A NTE289A	ECG289A ECG289A ECG289A	SK3449/297 SK3449/297 SK3449/297	#
Q3	D1617 2SD1617 8409-7320 2SD2006 8409-07320-1				#
ZD1	UZ-5.6BCC 8409-12480				#
ZD2	HZ-27BP HZ27BP 8409-12493				#
ZD3,4	UZ-12BCB 8409-12483				#

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For SAFETY use only equivalent replacement part.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

ELECTROLYTIC CAPACITORS

Items not listed are normally available at local distributors.

ITEM No.	RATING	MFGR. PART No.
	<u>POWER SUPPLY BOARD</u>	
C2	100 200V 20%	8409-31797

ITEM No.	RATING	MFGR. PART No.

CAPACITORS

Items not listed are normally available at local distributors.

ITEM No.	RATING	MFGR. PART No.
	<u>CONTROL BOARD</u>	
CA1	.001 50V Capacitor Array	8409-02551

ITEM No.	RATING	MFGR. PART No.
	<u>POWER SUPPLY BOARD</u>	
C1	.1 250VAC 20%	8409-02699
C3	.047 400V 10%	8409-02641
C7	.0022 125VAC 20%	8409-02071
C16	.0022 125VAC 20%	8409-02071
C18	470pF 1KV 10%	8409-31619

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
	<u>POWER SUPPLY BOARD</u>	
# L1	Line Filter	8409-34018
# T1	Pulse Transformer	8409-14209

ITEM No.	FUNCTION	MFGR. PART No.

For SAFETY use only equivalent replacement part.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
	<u>CONTROL BOARD</u>			
R77	470 5% 3W Metal Oxide	8409-04990	3W147	
RA1	Resistor Array (4700 X 8) 5% 1/8W	8409-06880		
RA2	Resistor Array (18 X 4) 5% 1/5W	8409-06951		
RA3	Resistor Array (2200 X 8) 5% 1/8W	8409-06875		
RA4	Resistor Array (10K X 4) 5% 1/5W	8409-06966		
RA5	Resistor Array (10K X 4) 5% 1/5W	8409-06966		
RA7	Resistor Array (4700 X 4) 5% 1/8W	8409-06810		
RA10	Resistor Array (2200 X 8) 5% 1/8W	8409-06875		
RA11	Resistor Array (1500 X 4) 5% 1/8W	8409-06822		
RA12	Resistor Array (1500 X 4) 5% 1/8W	8409-06822		
RA13	Resistor Array (1000 X 4) 5% 1/8W	8409-06806		

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	<u>CHASSIS</u>		
M1	Carriage Motor	94400-1014	
M2	Line Feed Motor	94400-1015	
M3	Print Head	94400-1200U	
	Print Head	94402-1200U	Canadian Version
M4	Paper Empty Sensor	94300-1101	
# PL1	AC Cord	94400-5351	
	AC Cord	94499-5351-1	
	AC Cord	94499-5351-2	
#	AC Cord	94499-5351-3	
	AC Cord Bushing	84500-2015	
	Belt	84920-1047	Timing
	Carriage Motor Assembly	94400-1014A	
	Line Feed Motor Assembly	94400-1015A	
	Paper Empty Sensor Assembly	94400-1101A	
	<u>CONTROL BOARD</u>		
BZ	Buzzer	8409-29001	
	Buzzer	8409-29001-1	
DIPSW1	DIP Switch	8409-24181	
	DIP Switch	8409-24181-1	
HMSW	Switch	94190-1451	Home Sense
LDSW	Switch	84270-1106	Automatic Paper Loading
X1	Oscillator	8409-13010	14.74MHz
	Oscillator	8409-13010-1	14.74MHz
	PC Board	94400-50019	Control
	<u>LED BOARD</u>		
DL1	LED	8409-11818	Power, Green (MPG4371F)
LED1	LED	8409-11819	Paper Out, Red (MUR4371F)
LED2	LED	8409-11818	On/Off Line, Green (MPG4371F)
LED3	LED	8409-11818	NLQ, Green (MPG4371F)
SW3	Switch	8409-24331	Line Feed
	Switch	8409-24331-1	Line Feed
SW4	Switch	8409-24331	Form Feed
	Switch	8409-24331-1	Form Feed
SW5	Switch	8409-24331	NLQ
	Switch	8409-24331-1	NLQ
SW6	Switch	8409-24331	On/Off Line
	Switch	8409-24331-1	On/Off Line
	PC Board	94400-1112A	LED
	<u>POWER SUPPLY BOARD</u>		
# F1	Fuse	8409-18280	Slow Blow
	600mA @ 250V		
# SW	Switch	8409-24505	Power
	Switch	8409-24505-1	Power
	Switch	8409-24505-2	Power
	Fuse Clip	8409-19011	Two Used
	Fuse Clip	8409-19011-1	Two Used
#	PC Board	94400-50149	Power

For SAFETY use only equivalent replacement part.

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MODEL DMP133 (26-2815)
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PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.
Assembly, Lower Case	94400-2003A
Lower Case	94400-2003
Assembly, Lower Case (1)	94402-2003A
Lower Case (1)	94402-2003
Assembly, Paper Rack	94400-2070A
Paper Guide, Left	94400-2180
Paper Guide, Right	94400-2187
Paper Rack	94400-2070

ITEM	PART No.
Cover, Printer	94400-2002
Knob - Paper Feed	84920-2090-1
Top Case Front Left	84920-1404
Unit, Upper Case	94400-2001U
Upper Case	94400-2001
Unit, Upper Case (1)	94402-2001U
Upper Case (1)	94402-2001

(1) Canadian Versions.

TROUBLESHOOTING

POWER SUPPLY

If printer is dead, connect 120VAC power to the printer. Set the Power Switch On and connect the negative lead of the meter to isolated ground. Check for 167.5V at the cathode of the Bridge Rectifier (DB1). If voltage is missing, check On/Off Switch (SW1), Fuse F1 and Power Cord (PL1). If voltage is present, check for 166.5V at the anode of Diode D2 and check for 306V at the cathode of Diode D2. Check voltages and waveforms associated with Switch Transistors (Q1, Q2) and Diodes D3 and D4. Connect the negative lead of the meter to ground and check for 5V at pin 6 of Connector CN1. If voltage is missing check the waveform at the anode of Diode D5, check Regulator Transistor (Q3) and Zener Diode ZD1. Check for -12V at pin 2 of Connector CN1. If voltage is missing check waveform and components associated with Diode D6 and Resistor R9. Check for 24V at pin 3 of Connector CN1. If voltage is missing, check waveform and components associated with Diode D7 and Zener Diode ZD2. If the 24V is present, check for 12V at the cathode of Zener Diode ZD3 and Resistor R11. If more than one voltage is missing, check the Power Transformer (T1).

CPU MICROCOMPUTER OPERATION

Check waveforms at pins 30 and 31 of CPU IC (P4). If waveforms are not correct, check Crystal X1 and Capacitors C14 and C16. Check for a logic High at pin 28 of IC P4. If the logic reading is wrong, check voltages and components associated with Reset Transistors (Q10, Q9 and Q5) and Zener Diode ZD1. Check the logic readings at pin 72 of Parallel Interface IC (P1). The logic reading should be Low for 1 second when power is first turned On, then the logic reading will change to High. Check the logic reading at pin 71 of IC P1. It should be Low for one second, then change to High. If the logic reading at pin 71 stays Low, lift one end of Resistor R26 and check again. If the logic reading changed, check IC P4 by substitution. If the logic reading did not change, check IC P1 by substitution.

CARRIAGE MOTOR

Check for 42 ohms between pin 5, or pin 6, and each of pins 1 thru 4 of Connector CN2. If the resistances are not correct, check Carriage Motor Assembly (M1) by substitution. If the resistances are correct, check waveforms at pins 5, 6, 7 and 8 of the CPU IC (P4). If waveforms are present, check voltages, waveforms and components associated with Drivers (Q28 thru Q31) and Buffer Transistors (Q32 thru Q35). Check for 24V at the emitter of Transistors Q32 and Q33. If the 24V is missing, refer to the "Power Supply" section of this Troubleshooting guide. If waveforms are missing at pins 5, 6, 7 and 8 of IC P4, check IC P4 by substitution.

PAPER FEED MOTOR MALFUNCTION

Note: All waveforms, voltages and logic readings in this section were taken with printer Power On, OFF Line and Form Feed button pressed.

Check for 24V at the emitter of Buffer Transistor (Q20). If the 24V is missing, refer to the "Power Supply" section of this Troubleshooting guide. If 24V is present, check voltages and components associated with Buffer Transistor (Q26). Check resistance of Line Feed Motor (M2) for 89 ohms between pin 5, or pin 6, and each of pins 1 thru 4 of Connector CN3. Check voltages, waveforms and components associated with Driver Transistors (Q21 thru Q24).

PRINT HEAD MALFUNCTION

Check for 24V at pins 7 and 8 of Connector CN1. If voltage is missing, refer to "Power Supply" section of this Troubleshooting guide. If 24V is present, check voltages, waveforms and components associated with Driver Transistors (Q11 thru Q19). If any driver is shorted, check the related solenoid for shorts. If any solenoid is shorted, replace Print Head (M3). Check for 19.5 ohm resistance for each solenoid. Before replacing the Print Head, check Transistors Q11 thru Q19 and make sure none are shorted.

PARALLEL INTERFACE CONNECTOR LINE DEFINITIONS

Pin 1 STROBE

When the printer receives the STROBE signal with logic low from the host computer, the printer reads the data from the printer interface in the computer and sets the Busy Line to logic high.

Pins 2 DATA thru 9

The host computer sends eight bits of parallel data to the printer. The printer reads the data from the data lines when STROBE pulse is received. A high level indicates a Logic 1, a low level indicates a Logic 0.

Pin 10 ACK

The ACK pulse is logic Low generated by the printer being power On, or host being initialized by INIT signal requested by the computer. When the ACK pulse is sent from the printer it tells the computer that the data from previous STROBE pulse has been read in, or the printer is ready to receive the next STROBE pulse.

Pin 11 BUSY

The printer sets the Busy line to a logic High in the following cases.

1. When the printer receives a STROBE pulse.
2. If the receive buffer is full.
3. Out of paper condition occurs.
4. The printer is off line.
5. The printer receives an INIT signal.
6. An error condition occurs.

Pin 12 PE

The printer will set the Paper Empty to logic high when printer runs out of paper.

Pin 13 BUSY

The BUSY line will be at a logic Low. If the printer is off line, or if it is in out of paper condition.

Pin 14 GND and 16

Pin 17 GND

Pin 18 +5V 80mA MAX SOURCE

Pin 19 GND thru 30

Pin 32 FAULT

The printer sets the FAULT line logic Low if the printer detects an error or out of paper condition. The ALERT Indicator flickers to indicate an error.

Pin 33 INIT

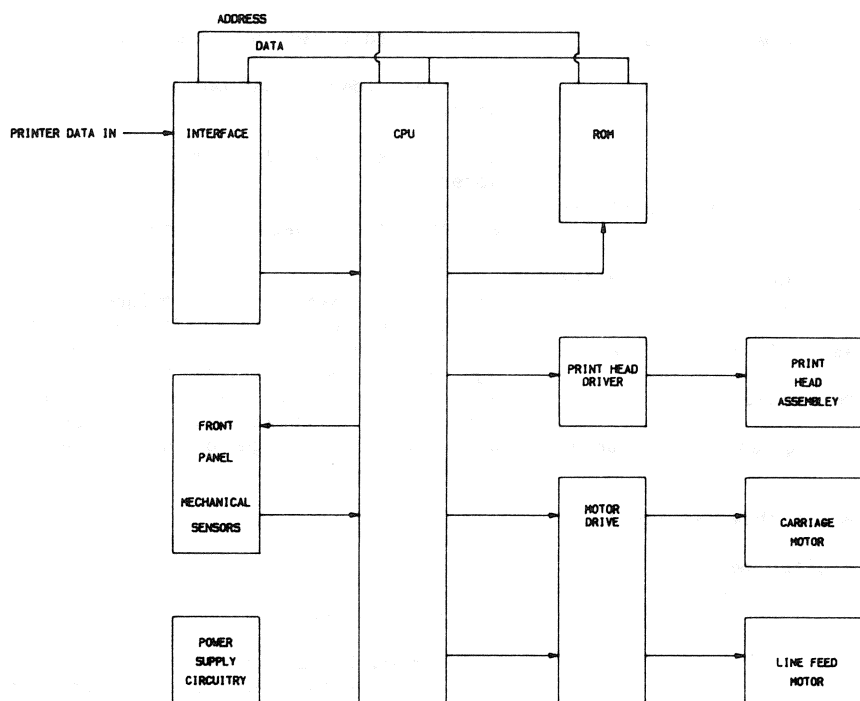
The INIT is a signal with logic Low sent from the host computer to the printer. It resets the printer to its initial power-on state. The BUSY line goes logic High and any data received will be printed.

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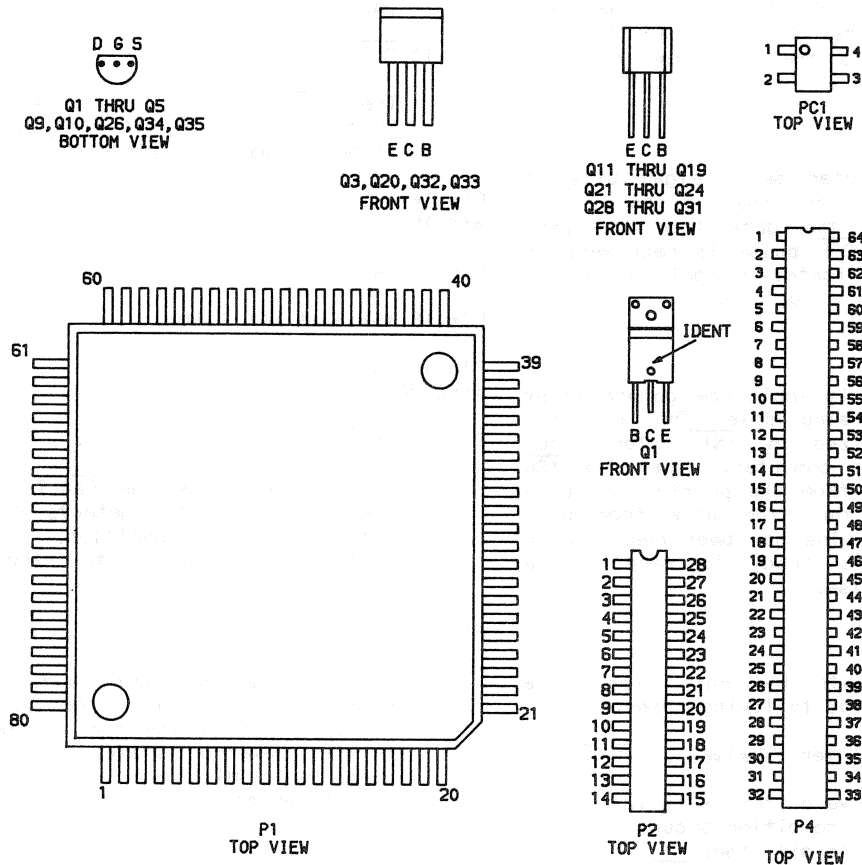
MODEL DMP133 (26-2815)

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BLOCK DIAGRAM



IC PINOUTS AND TERMINAL GUIDES



SCHEMATIC NOTES

- Circuitry not used in some versions
- Circuitry used in some versions
- See parts list
- ⊕ Ground
- ⏏ Chassis
- ▽ Common tie point

Waveforms and voltages taken from ground, unless noted otherwise.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

Measurements with switching as shown, unless noted.

Supply voltage maintained as shown at input.

Voltages measured with digital meter.

Logic Probe Display

- L = Low
- H = High
- P = Pulse
- * = Open (no lights On)

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

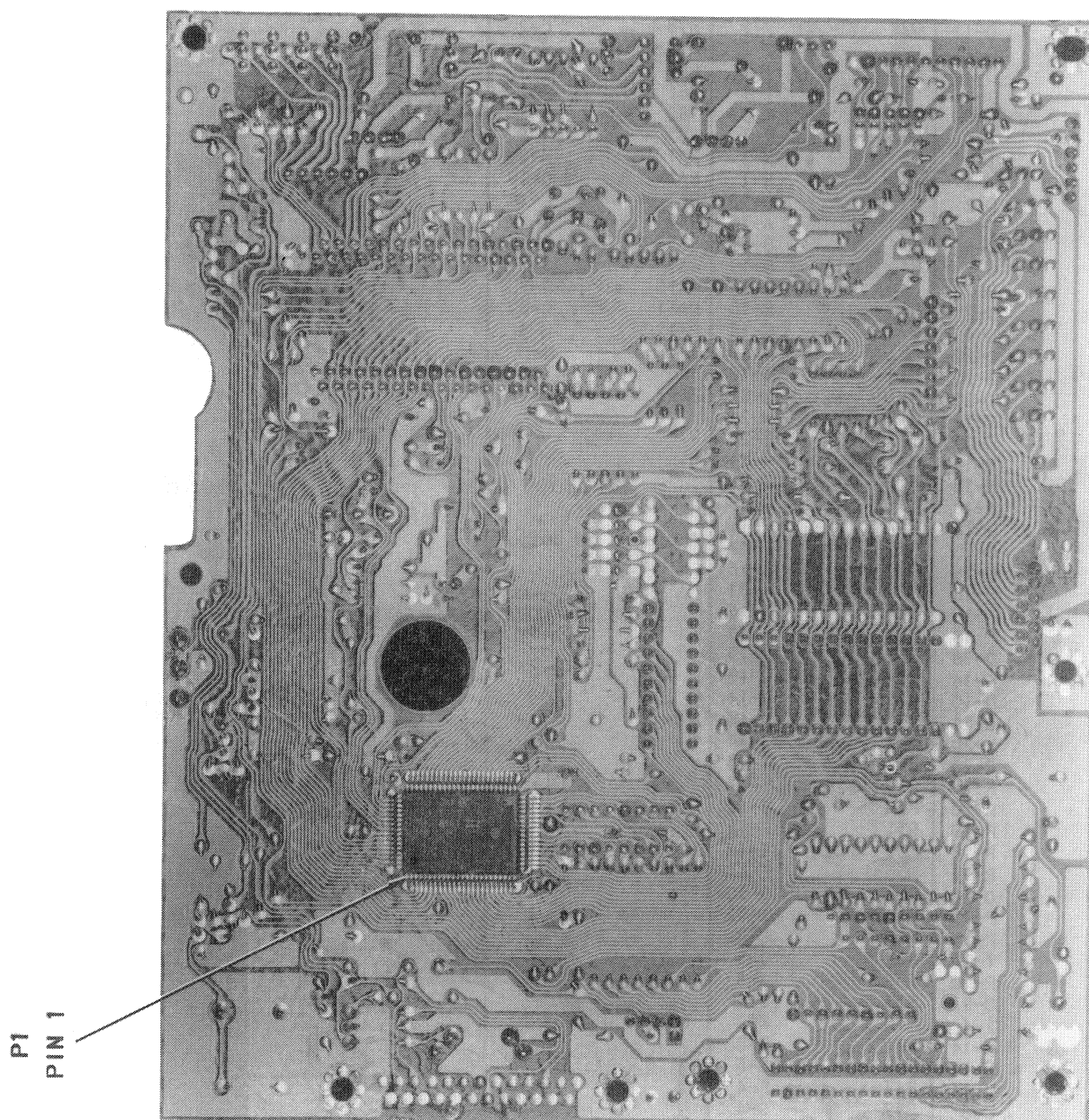
Electrolytic Capacitors are 50 volts or less, 5% unless noted.

Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on 0 reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 10cm. width with DC reference voltage given at the bottom line of each waveform.

Logic Probe Indicates:

- (3) P during Line Feed.
- (20) Change to opposite state according to DIPSW1 setting.

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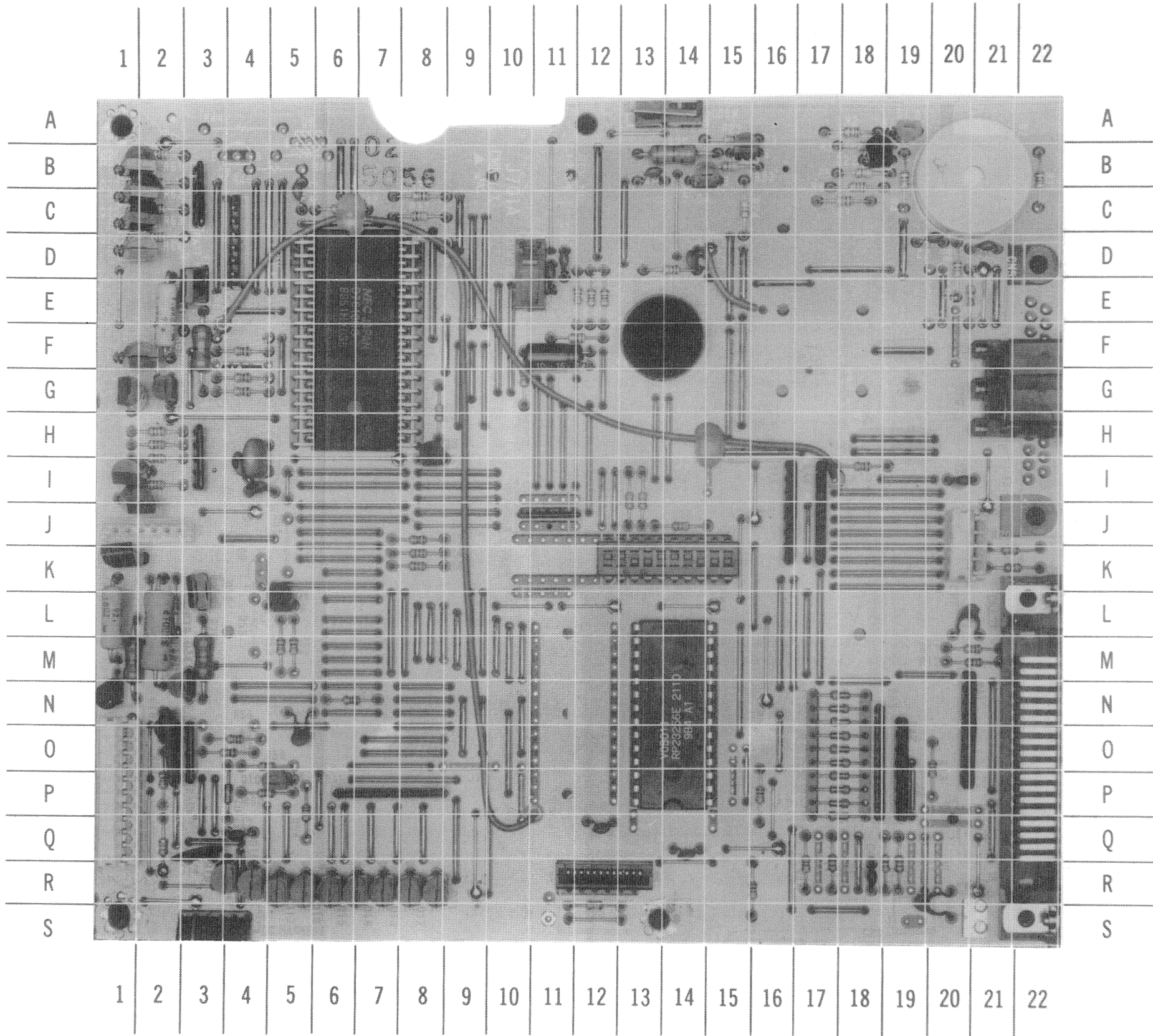


CONTROL BOARD-BOTTOM VIEW

CONTROL BOARD-TOP VIEW-
GridTrace LOCATION GUIDE

BZ	B-21	Q16	R-5	R65	F-3
C1	D-21	Q17	R-5	R66	E-2
C2	D-20	Q18	R-4	R67	E-2
C3	L-20	Q19	R-3	R71	H-2
C4	R-18	Q20	E-3	R72	H-2
C5	I-20	Q21	B-1	R73	I-2
C6	R-20	Q22	B-1	R74	I-2
C7	D-14	Q23	C-1	R75	M-3
C8	Q-14	Q24	D-1	R76	L-2
C9	B-13	Q26	G-2	R77	L-2
C10	Q-12	Q28	F-1	R78	L-2
C11	F-11	Q29	G-1	R79	M-1
C12	D-11	Q30	I-1	R80	L-1
C13	D-11	Q31	I-1	R81	P-2
C14	C-5	Q32	K-3	R82	Q-2
C15	I-4	Q33	K-1	R83	N-6
C16	I-4	Q34	N-3	RA1	N-21
C17	Q-4	Q35	N-1	RA2	O-19
C18	Q-2	R1	B-22	RA3	O-18
C19	Q-3	R2	A-18	RA4	I-17
C20	Q-5	R3	B-18	RA5	I-16
CA1	Q-2	R4	B-19	RA7	J-11
CN1	R-12	R5	B-18	RA10	P-7
CN2	J-2	R6	B-18	RA11	C-3
CN3	D-4	R7	C-18	RA12	H-3
CN4	Q-22	R8	D-20	RA13	O-3
CN6	G-22	R10	I-18	X1	H-4
CN7	K-20	R11	M-21	ZD1	P-4
CN8	P-1	R12	M-21		
D1	E-21	R13	P-20		
D2	N-18	R14	K-21		
D3	N-18	R15	R-19		
D4	N-18	R16	R-19		
D5	Q-18	R17	R-17		
D6	Q-18	R18	R-17		
D7	Q-18	R19	P-16		
D8	P-18	R20	K-21		
D9	P-18	R21	R-16		
D10	P-18	R22	A-15		
D11	Q-18	R23	B-15		
DIP SW1	K-14	R24	C-15		
HMSW	D-10	R25	B-14		
J3	Q-21	R26	D-14		
J4	P-20	R27	J-14		
J5	R-20	R28	I-13		
J6	R-20	R29	I-13		
J7	R-20	R30	E-12		
J9	R-19	R31	E-12		
J10	R-18	R32	E-12		
J11	R-17	R33	F-11		
J12	Q-16	R34	G-10		
J13	P-15	R35	S-12		
J14	P-15	R36	C-8		
J15	I-15	R37	C-8		
J16	P-10	R38	G-8		
J17	Q-9	R39	J-8		
J19	E-4	R40	K-8		
LDSW	A-14	R41	K-8		
P1	F-17*	R42	C-6		
P2	P-14	R47	F-4		
P4	D-6	R49	G-4		
Q1	A-19	R50	G-4		
Q2	B-18	R52	M-5		
Q3	B-15	R53	M-5		
Q4	B-14	R54	Q-5		
Q5	H-8	R57	O-4		
Q9	L-5	R58	O-4		
Q10	P-5	R59	O-5		
Q11	R-8	R60	P-4		
Q12	R-8	R61	B-2		
Q13	R-7	R62	B-2		
Q14	R-7	R63	C-2		
Q15	R-6	R64	D-2		

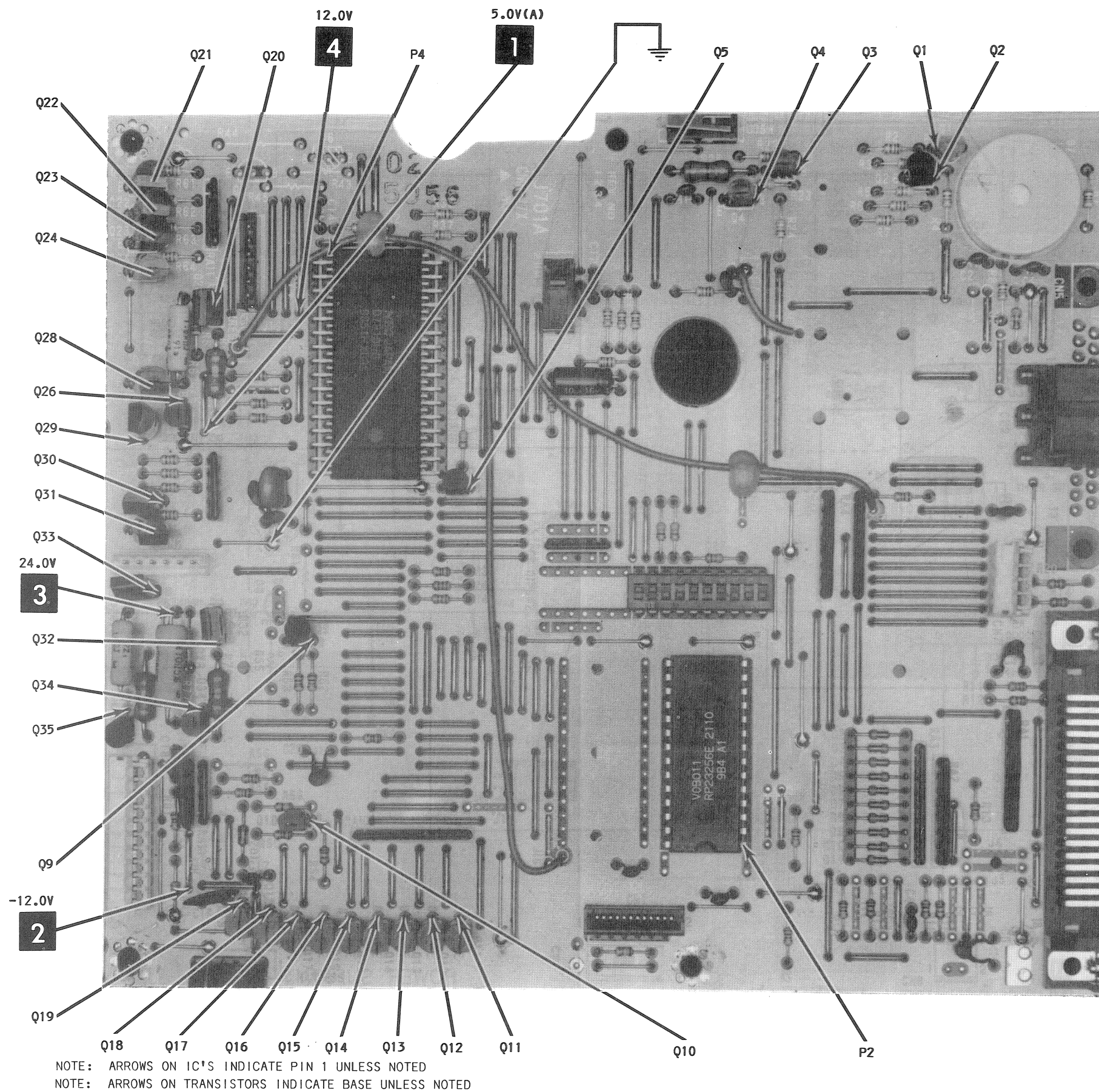
*Located on bottom
of board.



CONTROL BOARD-TOP VIEW

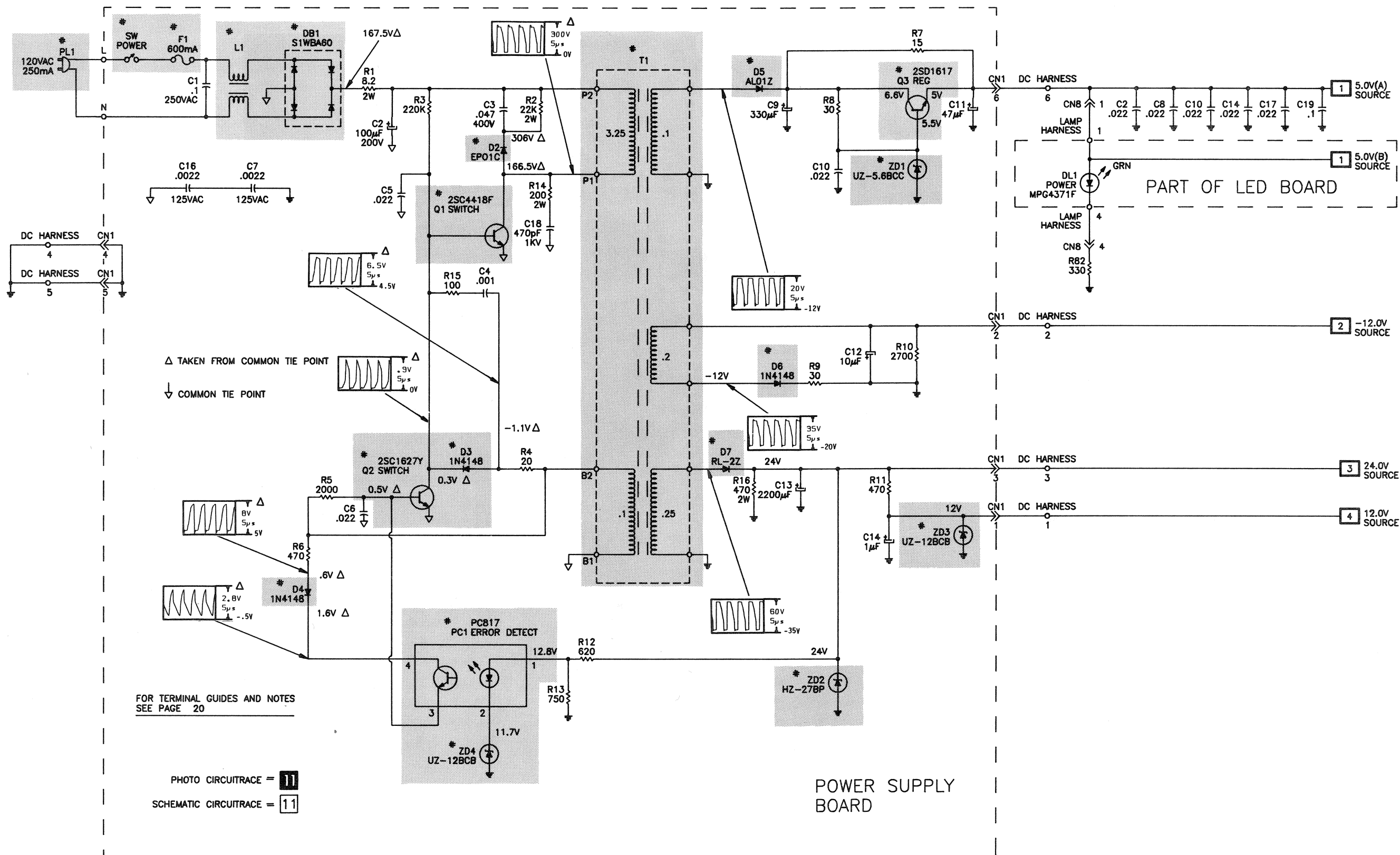
A Howard W. Sams GRIDTRACE™ Photo CONTROL BOARD-TOP VIEW

CP70
MODEL DMP133 (26-2815)
TANDY



CONTROL BOARD-TOP VIEW A Howard W. Sams CIRCUITRACE® Photo

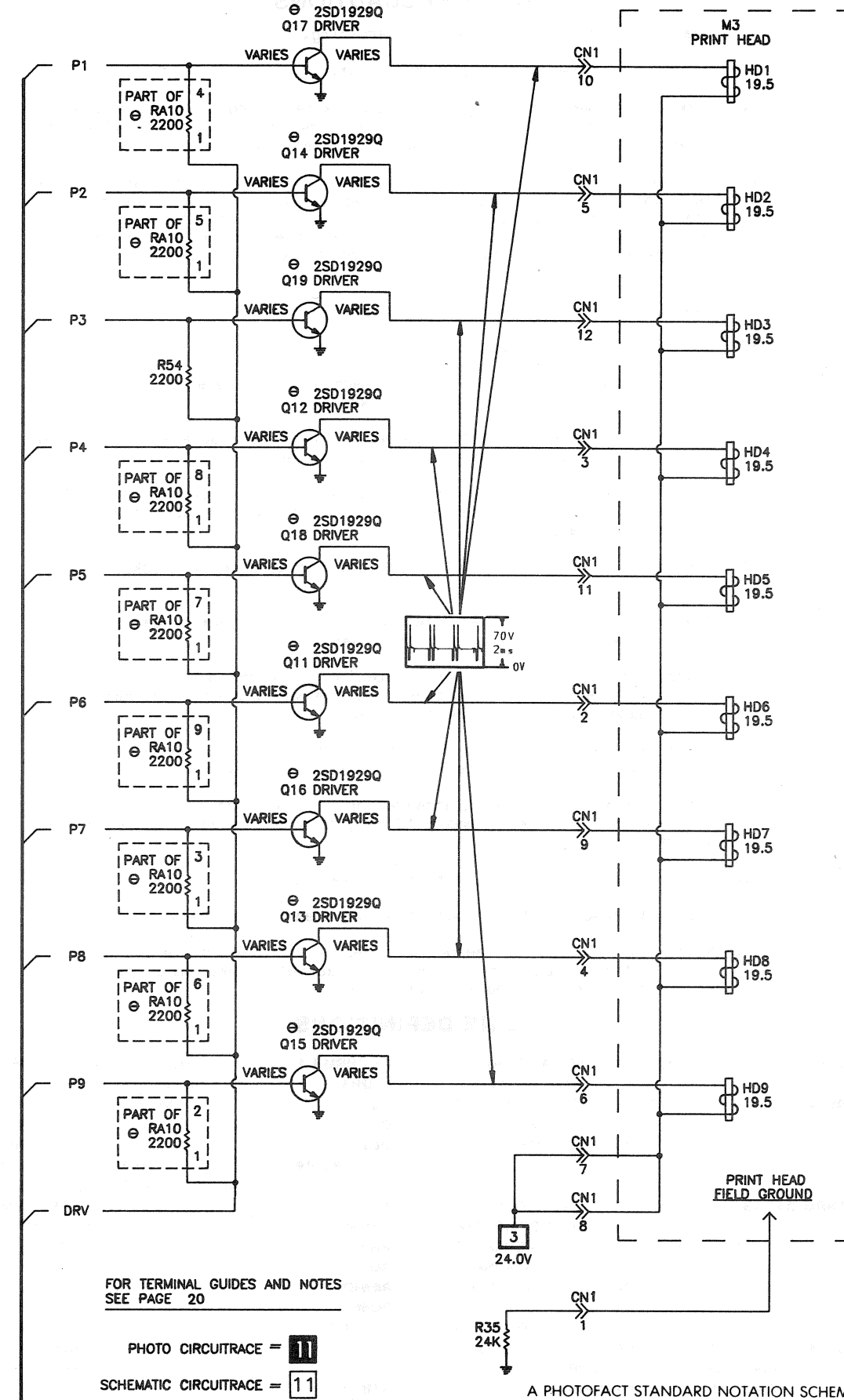
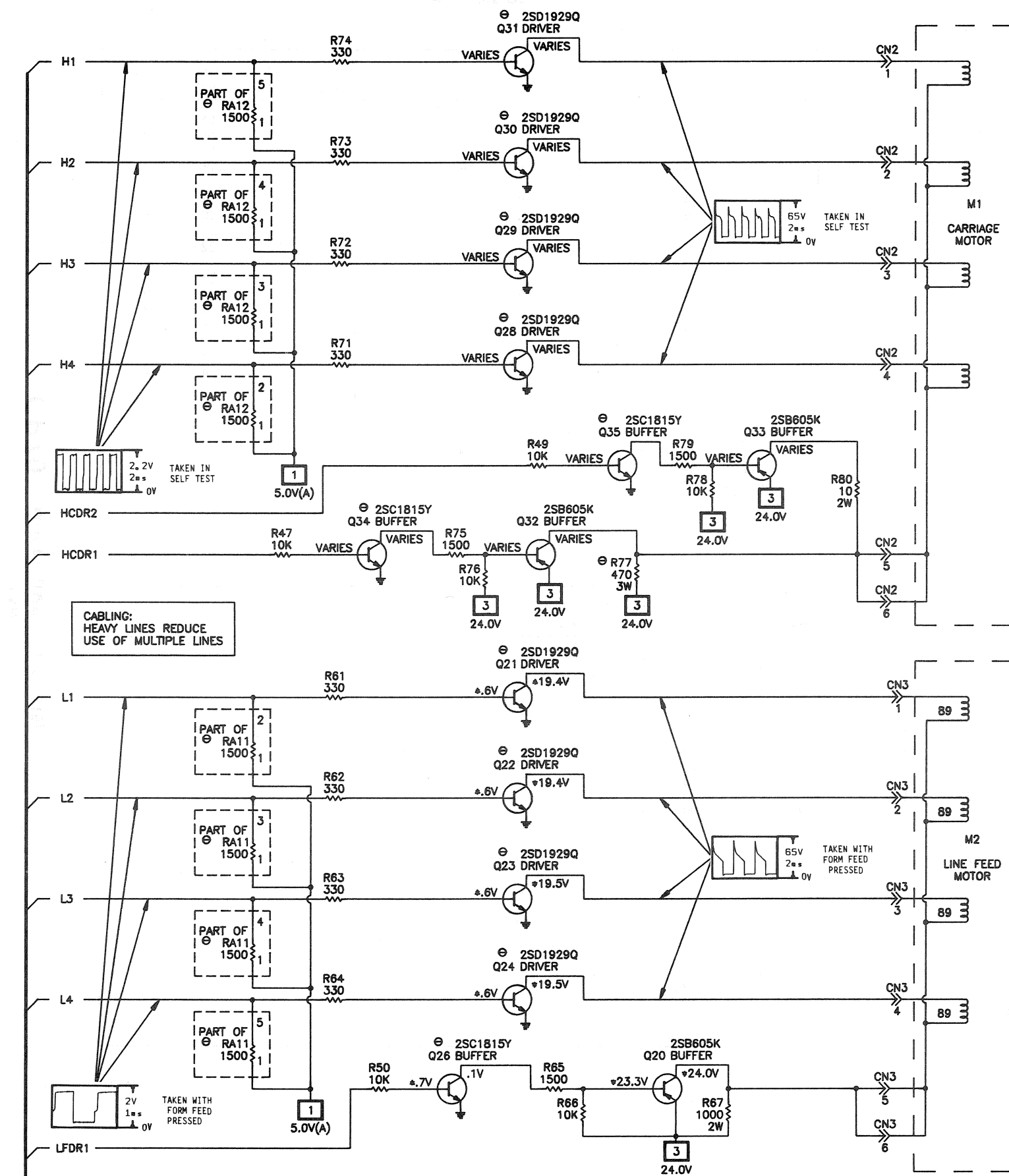
CONTROL BOARD-TOP VIEW



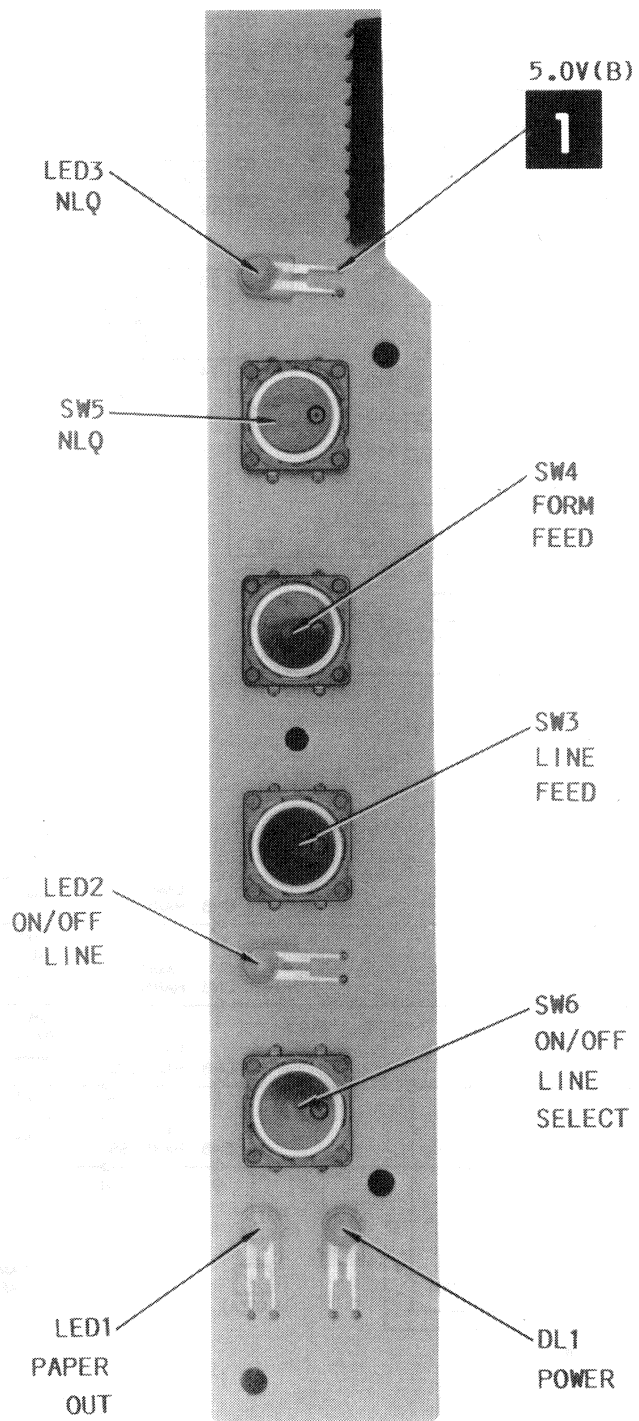
LOGIC CHARTS

PIN NO.	IC P1	PIN NO.	IC P1	PIN NO.	IC P1	PIN NO.	IC P1	PIN NO.	IC P2	PIN NO.	IC P2
1	P	21	H(20)	41	H	61	H	1	H	15	P
2	L	22	H	42	L	62	H	2	P	16	P
3	P	23	L	43	H	63	L	3	P	17	P
4	P	24	H	44	H	64	*	4	P	18	P
5	P	25	L(20)	45	P	65	P	5	P	19	P
6	P	26	L(20)	46	L	66	P	6	P	20	P
7	P	27	L(20)	47	H	67	P	7	P	21	P
8	P	28	P	48	P	68	P	8	P	22	P
9	P	29	P	49	P	69	P	9	P	23	P
10	P	30	P	50	P	70	P	10	P	24	P
11	P	31	P	51	P	71	H	11	P	25	P
12	L	32	*	52	L	72	H	12	P	26	P
13	P	33	H	53	P	73	H	13	P	27	P
14	P	34	*	54	P	74	P	14	L	28	H
15	P	35	P	55	P	75	P				
16	P	36	P	56	P	76	P				
17	L(20)	37	P	57	P	77	P				
18	L(20)	38	P	58	P	78	P				
19	H(20)	39	P	59	P	79	P				
20	H(20)	40	P	60	H	80	P				
PIN NO.	IC P4	PIN NO.	IC P4	PIN NO.	IC P4	PIN NO.	IC P4				
1	*(3)	21	L	41	H	61	P				
2	*(3)	22	L	42	H	62	P				
3	L(3)	23	L	43	H	63	H				
4	L(3)	24	L	44	P	64	H				
5	P	25	H	45	P						
6	P	26	L	46	P						
7	P	27	P	47	P						
8	P	28	H	48	P						
9	L	29	P	49	P						
10	H	30	P	50	P						
11	H	31	P	51	P						
12	H	32	L	52	P						
13	H	33	L	53	P						
14	L	34	H	54	P						
15	H	35	H	55	P						
16	H	36	H	56	P						
17	L	37	H	57	P						
18	H	38	H	58	P						
19	L	39	H	59	P						
20	H	40	H	60	P						

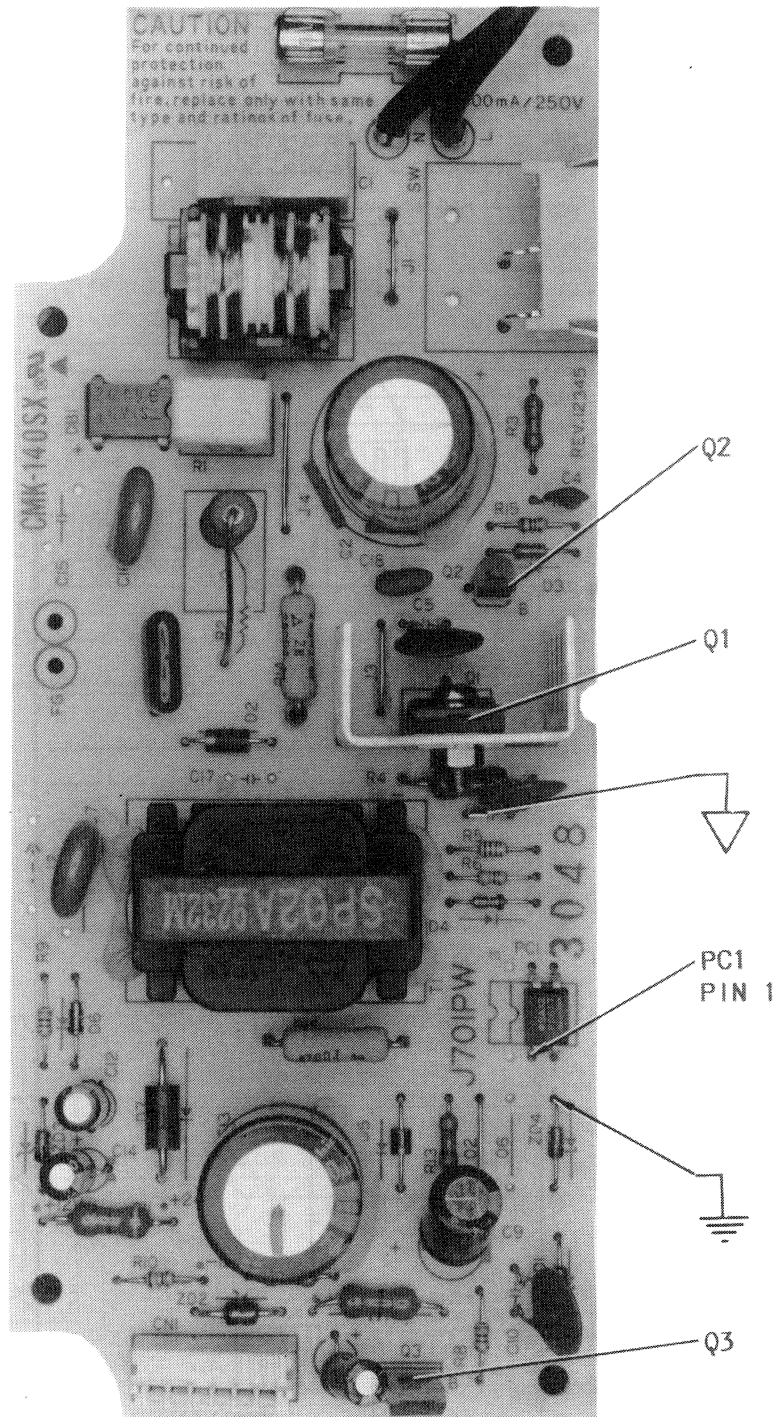
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A PHOTOFAC STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**
 © Howard W. Sams & Co. 1990



LED BOARD A Howard W. Sams **CIRCUITRACE®** Photo



NOTE: ARROWS ON TRANSISTORS INDICATE BASE UNLESS NOTED

POWER SUPPLY BOARD

**POWER SUPPLY
BOARD-
GridTrace
LOCATION GUIDE**

C1	B-4
C2	E-5
C3	G-2
C4	F-6
C5	G-5
C7	J-1
C9	M-5
C10	N-6
C11	O-4
C12	L-1
C13	M-3
C14	M-1
C16	F-2
C18	G-5
CN1	O-2
D2	H-3
D3	F-6
D4	J-6
D5	L-5
D6	K-1
D7	L-2
DB1	E-2
F1	A-4
L1	C-3
PC1	K-6
Q1	H-5
Q2	G-6
Q3	O-5
R1	E-3
R2	F-3
R3	E-6
R4	I-5
R5	I-6
R6	J-6
R7	N-5
R8	O-6
R9	K-1
R10	N-2
R11	M-2
R13	M-5
R14	G-4
R15	F-6
R16	K-4
SW	C-6
T1	J-4
ZD1	N-6
ZD2	N-3
ZD3	M-1
ZD4	L-6

